POPULAR Computing WEEKLY

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Vol 3 No 51

Acorn plans new BBCs

ACORN is thought to be working on two new computers to replace its now ageing BBC micro next year

The first, tentatively called the BBC B+, will be a 64K Ram version of the present BBC machine. The micro will be compatible with existing BBC software but with a switchable display mode, so it will be possible to displace the screen Ram giving the machine up to 64K of usable memory. A similar system of memory organisation is already being marketed as an add-on Ram board for

continued on page 5 ▶

BT 'mole' theory squashed

THE argument over whether a British Telecom 'mole' exists who is supplying confidential system information to hackers (see *Popular Computing Weekly*, December 13) seems to have reached a conclusion.

Last week Timefame International, Prestel's second largest information provider, which suggested on Prestel that there could possibly be a BT 'mole' at work, climbed

```
     To    ICL-NW-REG-1   (ICL    )
     To    ICL-NW-REG-2   (ICL    )
     To    ICL-SNE-REG-3   (ICL    )
     To    ICL-MERLIN-A/C   (ICL    )
     To    TELEXBOX   (ICL    )
     To    J.V PAYTER   (ICL    )
     To    ICL-SW-DEMO-1   (ICL    )
   From    TELEXBOX   (ICL    ) Posted   Tu
e  4-Dec-84  10 53 GMT Sys 84  (12)
Subject   Hacker here!
```

down. Timefame was blacked from the network following its allegation, and was preparing a court injuction against its removal by BT

"We have agreed to discontinue proceedings commenced against British Telecom in the High Court in return for reinstatement of our database on Prestel upon mutually agreed terms", said a spokesman at Timefame

Timefame's original allegations were given weight when three hackers broke into ICL Telecom mailboxes two weeks ago. One of the hackers involved has claimed he received the necessary passwords to access the ICL pages in a message left in his own electronic mailbox by an individual signing him or herself 'BT Mole'

British Telecom has always

continued on page 5 ▶

MSX prices look set to tumble

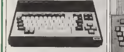
MSX prices are tumbling in a last-minute bid for the Christmas market.

Both Toshiba and Spectrum Group have announced price cuts in their respective machines, the HX-10 and the AVT Goldstar FC-200.

The HX-10 price has dropped by £40, from £279 95 Two days after Toshiba announced its cut to £239 95, the Goldstar, launched at £239 99 was reduced in price to £199 99, making it £100 less than Sony, Sanyo and Mitsubishi models

"This is a permanent price change, for the HX-10, and not just for the Christmas rush," explained a Toshiba spokesman. "It's a lively challenge for the leadership of the MSX market — we were the first to

continued on page 7 ▶





READERS POLL



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) View

Well, what do you know?

The MSX manufacturers are beginning to realise that £275-plus is really a bit on the steep side for a conventional 64K Z80 micro

Toshiba has cut its price by £40 to £239 and Goldstar has followed suit by dropping to £199 The other MSX companies may well now consider dropping their prices accordingly

At under £200 the MSX standard begins to look a bit more attractive Still, Commodore in turn may feel sufficiently threatened to cut the cost of its C64 well under £199 after Christmas, following last week's example set by Atari. The Atari 800XL is now only £129

Now take two paces back and try to look objectively at the BBC micro. At £399 for a 32K 8-bit machine it now rerepresents pretty appalling value for money Even the 32K Acorn Electron at £199 looks overpriced

Surely Acorn must do something soon with the BBC micro Either it must cut the cost dramatically or it must launch its larger memory BBC B Plus' model early next year.

On a simple memory-for your-money scale the Acorn machines are now both lagging way behind their competitors

Changing the subject totally, this is our Christmas issue.

May we wish you a Merry Christmas and a Happy New Year from all at *Popular*

Don't take in too much of the Christmas spirit all at once — see you in the New Year.

POPULAR Computing WEEKLY

Vol 3 No 51

) Presents...

) Futures...

Screendump to printer on QL, dissolve your Spectrum screen and Star Game is Fly-by-night on C64

Editor David Kelly **News editor** Christine Erskine **Features editor** Graham Taylor **Software editor** John Cook **Production editor** Lynne Constable **Editorial secretary** Geraldine Smyth **Advertisement manager** David Lake **Assistant advertisement manager** Alastair Macintosh **Advertisement executive** Tom Watson **Classified executive** Diane Davis **Advertising production** Lucinda Lee **Administration** Theresa Lacy **Managing editor** Duncan Scot **Publishing director** Jenny Ireland

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How to submit articles Articles which are submitted for publication should not be more than 2000 words long The articles and any accompanying programs should be original It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish although we will always try our best to make sure programs work

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C128 confirmed

COMMODORE'S new 128K machine — the C128 — is set for launch at January's Consumer Electronics show in Las Vegas

The machine will be produced in two versions — one of which will contain a built-in twin disc drive. Unlike the Plus/4 neither model will include any built-in software

The 128K memory of the machine is divided into two banks of 64K each, as its design is based on the 6502 processor which can only address up to 64K. The first 64K is immediately available — and is fully compatible with existing C64 software; second becomes available by hitting a function key

Both C128 machines are expected to be shipped to the UK in April.

Acorn

◄ continued from page 1

the BBC by Anes and the company is believed to be working with Acorn on the BBC B+ The B+ is expected to sell for around £400

The second new Acorn machine is called the C30 The machine is unlikely to be launched before Summer 1985 and will probably use a 16-bit version of the BBC machine's 6502 processor Acorn's likely choice will be the W65SC816 chip being developed by the US company Western Design Centre

The W65SC816 is not quite a true 16-bit processor, but it can address a larger area of memory, up to 24 megabytes For Acorn it also has the big advantage that it is pin compatible with the 6502 chip used in the existing BBC machine The C30 is expected to cost around £800

Thurnall enhances disc drive

THURNALL Electronics has released an enhanced version of its Spectrum disc drive

The new version will enable users to transfer their programs from cassette or microdrive to the discs The drive, which previously used a Hungarian MCD disc system, now uses the standard Hitachi drive system, running 3inch discs

The disc drive is fully compatible with microdrives, Interface 1, printers and joysticks. A *Tasword* package has also been developed, with Tasman's permission, which will enable users to save files to the disc system to use with *Tasword*.

The disc system, which costs £219 95 contains the disc drive, an introductory program, manual and leads

Details from Thurnall Electronics, 95 Liverpool Road, Cadishead, Manchester

Mole squashed

◄ continued from page 1

firmly denied the existence of any moles "There never was a Prestel 'mole' and no-one has ever suggested a BT Gold mole," commented an official spokesman.

The three hackers used the passwords from the so-called BT Mole to gain access to British Telecom's BT Gold information system using a VTX 5000 modem linked to a Spectrum.

The message from BT Mole detailed BT, BT Gold and terminal pass codes together with ICL identity numbers.

The hackers were able to gain access to a number of ICL mailboxes sending messages such as 'Hacker here' and 'Hacking (yet again)' to 30 to 40 other mailboxes

They also entered ICL's Telex box and sent telexes to ICL regional offices in the UK, to regional offices of BT and one to the News editor of ITN, Steve Clark.

Steve Clark confirmed he had received a telex from ICL from someone purporting to be a hacker, he said, "The telex claimed that similar telexes had been sent out to various other accounts "

The three hackers also claim that the motive for their break-in was as a protest against BT's security, and to draw BT's attention to security lapses.

A spokeswoman for ICL commented, "The mailboxes that were broken into were unprotected with no special passwords needed to enter them, so to hack them would not have been too difficult Although, it is annoying there would be no confidential information kept in those boxes "

"Since the hacking, those mailboxes have had passwords put into them, so they are now protected.

Amstrad games from Hewson

HEWSON Consultants launched a new range of products last week, aimed at the 'post-Christmas' market.

Of the games only one is brand new — *Technician Ted*, a *Jet-Set Willy*-type game set in a (silicon) chip factory It is available for Spectrum and Amstrad CPC464 machines (£5 95 and £7 95, respectively)

The highly rated graphic and text adventure *Fantasia Diamond* has been converted for the Amstrad at £7 95 This game will also be available for the Enterprise in February under Enterprise's own name, as will Heathrow Air Traffic Control.

Also for the Amstrad, Hewson launched Heathrow International ATC at £7 95 consisting of two games — *Heathrow*, complete with Concorde on one side of the tape, and *Schipol Airport* on the other

"This year retailers have been far more cautious about stocking the shelves with software for Christmas itself," said Hewson managing director Andrew Hewson "We feel there will be a demand after Christmas for new games"

More news on page 7

Sinclair car due out soon

THE much discussed Sinclair electric car is due to go on sale in January, for around the same price as a QL computer, just under £400

The car has been designed for either commuting or leisure purposes Its top speed is just 15 mph and its twin electric batteries give it a range of 24 miles after being fully charged. The batteries drive a motor derived from that in a conventional automatic washing machine

The car, currently codenamed the C5, is just 8½ feet long and 2½ feet wide It is a single-seater and in its basic form it is open-topped A roof cover will be available as an optional extra.

The bodywork, wheels and tyres are entirely made of plastic, while the chassis is made of pressed steel

The C5 is intended to be the first in a series of Sinclair cars and the bottom of the range

It is being made at the Hoover plant in Merthyr Tydfil, and Sinclair plans to manufacture over 100 000 of the cars in 1985

Microdrives no price cut

THE price of Sinclair's microdrive cartridges now seems very unlikely to come down this year as originally promised by the company.

In the summer Sinclair managing director Nigel Searle said that Sinclair would cut the price of the cartridges from their present price of £4 95 "before the end of the year"

Last week, a Sinclair spokesman said "I've heard nothing about the planned reduction, and I don't think there will be any news in that area."

Sinclair is considering the possibility of offering Spectrum + machines in a form of upgrade from the ordinary Spectrum Whether owners would exchange their 'rubber keyed' models for the Plus or whether the up-grade would be made available in kit-form has not yet been decided.

REAL ARCADE ACTION! FROM JETSOFT



Maplin's hero comes to UK

MAPLIN Electronics, well known as suppliers of electronic and computer components has launched Hero Jr on to the UK market.

Hero Jr is claimed by the company to be 'the world's first fully pre-programmed and programmable personal robot.'

Says David Snoad of Maplin, 'With his special personality modes and pre-programmed routines, he is the first real home companion robot.'

These routines include spontaneously spouting poetry, singing nursery rhymes, seeking out human companions and playing games. More seriously, although designed primarily for entertainment, using sonic and infra-red sensors Hero Jr can also be used as a home security guard.

Powered by two six volt rechargable batteries, the 19inch robot, weighing in at 21 4lbs, is controlled by a 6808 chip with 32K of monitor Rom and 8K Ram expandable up to 24K. An RS232 interface has been included, so it is possible to program the device from most home micros.

Hero Jr is not cheap. It costs £399 in kit form and £1099 fully-assembled. A de-luxe version is available at Harrods costing £1495.

Details from Maplin, PO Box 3, Rayleigh, Essex.

Mickey goes on C64

WALT DISNEY'S link-up with US software house Sierra, announced in June, has produced its first programs for the Commodore 64.

Three titles are now available — *Winnie the Pooh in the Hundred Acre Wood, Donald Duck's Playground* and *Mickey's Space Adventure*. All three have a strong educational slant and are aimed at the 7 to 11 age group.

MSX prices tumble

◄ continued from page 1

launch in the UK, and so we're anxious to maintain that leadership."

"We certainly didn't think of it as a deliberate move into the Goldstar's price range."

Commenting on the cut in the price of the Goldstar, Neil Johnson joint managing director of Micro Dealer UK, which distributes the machine, said, "The MSX Goldstar has just the same facilities as its more expensive Japanese rivals. We are simply ensuring that consumers are faced with their original choice. Why pay more for the same thing?

"The real question to ask is why did a strong brand name company like Toshiba feel it necessary to slash its price?"

Whether other MSX companies follow suit and cut their prices remains to be seen, but at the top end of the price range, both Sony and Mitsubishi (64K machines each £299) claimed their prices would stay the same.

A Mitsubishi spokesman commented. "Our 32K machine is £249 and therefore in the same sort of price area. Certainly Mitsubishi are not considering a reduction for the 64K model."

"There is no kind of agreement within the MSX working group to keep prices consistent — now that the machines are launched, it's very much a go-it-alone situation."

Steve Dowdle, product manager for Sony, said, "We are not planning a price drop. We feel that £299 is the right price for the quality of the product."



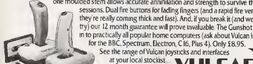

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Letters

A loss leader

No Amstrad Bug? Or am I spoiled by Sinclair?

Try editing below a *Data* statement. For example, *50 Read Proofer$(n) + ""* Also *35 a$ = "arnold" + ""* This is demonstrably a housekeeping error — the *$* makes it a dynamic variable.

Breaking from a tape operation often leaves HiMem temporarily 4K lower than usual *Clear* seems to be the simplest way to overcome this — what else can be done if you want to continue? I didn't try "close-out", but then these commands were unused because at the time I didn't realise you can *Poke* things to Stream 9

Over feeding the sound queue from interrupts has a higher priority than *Break* I have never waited to see if this lock-up will time-out.

One other point: why did Amstrad place the transformer next to the green-screen VDU coils? Try removing it and see if Amstrad still regard gentle undulations as a non-fault condition.

Do Amstrad think they have a loss leader or someting? Apparently software up-dates are not available unless one pays out £20 a year

Why is there still no modulator version of the machine? That's nearly as bad as the Spectrum (£180 — hey look a joystick and printer port.)

H Williams
66 High Street
Brackley
Northants

Mutually dependent

As one of those unfortunate souls who try to scrape a living creating software masterpieces I spend a great deal of time criticising the computer press, usually in words of four letters.

As a method of relieving tension in times of stress, casting aspersions upon the intellect of reviewers takes a lot of beating

However, recognising that we are mutually dependent I usually avoid making my views public. Indeed, my first excursions into the computing industry were made via the typewriter rather than the computer keyboard, so I like to think I can see both sides of the many arguments

But now *Popular Computing Weekly*, of all the mags on the shelves, has been the first to annoy me enough for me to wipe the cobwebs off the old typewriter and write a letter of complaint Bad reviews I can take, after all any review is subjective and it is inevitable that some reviewers have bad taste

No, what has really got my proverbial goat is your Readers' Chart. But you might say, and indeed probably are, nearly every magazine has a readers chart. This is democracy in action. (Then why hasn't the government tried to abolish it?) What makes your chart different from all the others is the prize offered for predicting the Top 3 correctly This will inevitably result in a large proportion of the votes being predictions rather than true expressions of opinion. As a result the best known names wil tend to monopolise the top of the chart at the expense of the lesser known, and often better, programs Surely no one, except maybe the programmers of *Daley Thompson's Decathlon*, could pretend for a minute that this sort of 'chart' is good for the industry You could be doing the same thing to games charts as the Radio One playlist has done for the music charts.

Nevertheless like any good synchronised swimmer I refuse to let my smile fade and enclose three entries/votes for your competition/chart.

1) Predictions
1) *Daley Thompson's Joystick Devastator* (Spectrum) Ultimate
2) *Underwurlde* (Spectrum) Ultimate
3) *Knight's Lore* (Spectrum) Ultimate

2) What I would like to see
1) *Sorcery* (C64) Virgin Games
2) *Strangeloop* (Spectrum) Virgin Games
3) *Falcon Patrol II* (C64) Virgin Games

3) Genuine votes
1) *Knight's Lore* (Spectrum) Ultimate
2) *Summer Games* (C64) Epyx/Quicksilva
3) *Sorcery* (C64) Virgin Games (a little bias here I think)

(I was going to enclose a five pound note to encourage you to print this but I gave it to a barperson instead.)

Andy Wilson
Virgin Games
2 Vernon Yard
119 Portobello road
London W11

I can see your point, Andy, but it's one of those things where if you offer a prize people vote for what they think will win but if you don't not enough people vote to make the chart in any way meaningful.

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"Is that to be an MSX standard price?"

No coverage

In response to AE Slad's letter (December 6 issue) I would like to say what a load of rubbish.

Could anybody tell me how the Dragon is superior to the BBC or QL?

I agree it is very upsetting when your micro is nearly dead through lack of press coverage so leading to little software, etc — I own both an Atom and a Memotech MTX 500

But this leaves no excuse for slagging off perfectly good micros, without bothering to see how bad the Dragon is Next time, THINK!

P Arkley
Accrington
Lancashire

Procedure name

I have found a problem concerning the Sinclair QL which I have not seen any correspondence about in the magazines and wonder if it is a peculiarity of my machine I have a replacement JM version Rom.

When a procedure is defined and then subsequently deleted from the program (or when its name is changed) in the course of program development, the procedure name is will remembered by the system and any attempt to use the same name (for example, as a variable name) results in an error Typing the name directly produces the same effect, bis more seriously, in a proportion of cases the computer then locks up This problem is resistant to the *Clear* command, though a *New* will restore order

Removing redundant procedures is therefore very risky if they are subsequently called. The effect can be avoided by saving the program to microdrive and then reloading it.

Hugh O'Neal
The Old Bakery
Lewes Road
Ringmer
E Sussex

Train shuffle

The thinking man's answer to falling leaves on the line, for the BBC B or Electron, by Robert Hadden

In this colour graphics game with a difference you have to create a safe path for a train and guide it through the stations, so it travels relentlessly on its way

The track is divided into a square grid with one empty square Just as in the plastic pocket games where you try to complete a picture, here you must move the track squares into the empty space to try and arrange one continuous length of track (it is even possible to move the square with the train on it)

When the train has visited all the red-coloured stations, you get a new random track pattern which is first larger, and then more difficult — the train moves faster, and there are more track corners than cross roads.

Program Notes

The program has a main loop in *Lines 20-90* which calls various procedures until all the stations are visited, or you have crashed.

Procsetup — draws the grid with a *For Next* loop and sets the random track pattern into the array G(x,y) *VDU 5* links the text to the graphics cursor

Procdr(i) — draws track pattern number i (from 1 to 10) by using Plot 81 which draws triangles relative to (OI,OJ) DX, DY, etc, are relative movements about the four corners of the track on the square

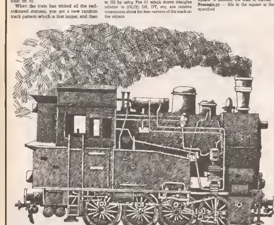
Procspe — prints engine at the point (x,y)

Procen — moves the engine and checks the colour of the point it moves to by Point (x y) Yellow or green (colours 0 to 3) indicate a crash, and red (colour 1) a station. When the engine reaches the edge of a square, it recalculates its direction of travel.

Procst — turns the red track to black, and scores points.

Procmove — tests the keyboard buffer with Inkey and adjusts the co-ordinates (I,J) of the blank square which is swapped with one track square If needed, the train is moved.

Procsq(x,y) — fills in the square at the point specified



```
10 MODE5:VDU19,0,2;0;19,3,3;0;19,2,0;0;:VDU23,255,0,0,132,180,252,252,252,72.
DIMG(8,8)
20 S=0:L=4:SK=8:CHE=0:D=0:REPEAT
30 PROCSETUP
40 REPEAT
50 PROCMOVE
60 PROCEN
70 PROCMOVE
80 UNTILST=0ORD:UNTILD:SOUND1,-15,20,15:VDU4:PRINT"GAME OVER";
90 IFGET=32 GOTO20ELSEGOTO90
100 DEFPROCSETUP
110 L=L+1:IFL=8 L=5:SK=SK+2*(SK>-1)
120 ST=2*INT(L/2):GCOL0,2:CLS:VDU4:COLOUR1:IFL 7 PRINTTAB(3,0)'TRAIN SHUFFLE'S
PC(8)"by R.Hadden" "A-up   Z-down" "<-left >-right'
130 G=L*130+100:FORQ=100TOG STEP130:MOVE100,Q:DRAWG,Q:MOVEQ,100:DRAWQ,G:NEXT
140 FOROI=1TOL:FOROJ=1TOL:IFOI=2ANDOJ=2 T=8ELSET=RND(6+SK):IFT>10 REPEAT.T=T-S
K+4:UNTILT<11
150 G(OI,OJ)=T:PROCTR(G(OI,OJ)):NEXTOJ,OI
160 GCOL0,1:FORQ=0TO1:OI=(L+1)*Q:FORF=1TOINT(L/2):OJ=2*F-1:PROCTR(2-Q):G(OI,OJ
)=2-Q:OJ=OJ+1:PROCTR(4-Q):G(OI,OJ)=4-Q:NEXTF,Q
170 A=2:B=2:T=G(A,B):I=L:J=L:GCOL0,3:PROCSQ(I,J):OI=I:OJ=J:PRINTTAB(0,30)"Scor
e ";S:XS=0:YS=10:C=12:GCOL4,1:X=295:Y=235:VDU5:PROCPE
180 ENDPROC
190 DEFFNPOS(V):=((V+30)/32.5)MOD4
200 DEFPROCTR(T)
210 MOVE130*OI-30,130*OJ-30
220 IFT>4 GOTO270
230 IFT MOD2=1 DY=0:DX=80:DZ=30:DW=50:DV=0ELSEDY=130:DX=-50:DZ=-30:DW=-80:DV=30
240 PLOT0,DY,DW:PLOT0,0,DZ
250 IFT<3 DY=DV+50:DZ=-30ELSEDY=DV-80:DX=DX-30:DZ=30
260 PLOT81,DX,DY:PLOT81,DZ,0:ENDPROC
270 IFT=9 PROCTR(1):PROCTR(4):ENDPROC
280 IFT=10 PROCTR(2):PROCTR(3):ENDPROC
290 IFT>5 PLOT0,50,0:PLOT0,0,130:PLOT81,30,-130:PLOT81,0,130:PLOT0,-80,-130
300 IFT=6 ENDPROC
310 PLOT0,0,50:PLOT0,130,0:PLOT81,-130,30:PLOT81,130,0:ENDPROC
320 DEFPROCPE:MOVEX-32,Y+16:VDU255:ENDPROC
330 DEFPROCEN
340 PROCPE:X=X+XS:Y=Y+YS:P=POINT(X,Y):IFP=0ORP=3 D=1
350 IFP=1 PROCST
360 C=C-1:IFC PROCPE:ENDPROC
370 OA=A:P=FNPOS(X):IFP=3ORP=0 P=(P-1.5)/1.5:X=X+P*10:A=A+P
380 OB=B:P=FNPOS(Y):IFP=3ORP=0 P=(P-1.5)/1.5:Y=Y+P*10:B=B+P
390 T=G(A,B):IFT<9ANDT>4 C=12ELSEC=6
400 XS=10*((A-OA)-(A=OA)*(T<5)*(T MOD2=0)+(A=OA)*(T<5)*(T MOD2=1)-(T>8)*(A=OA)
*(OB-B)*2*(9.5-T))
410 YS=10*((B-OB)-(B=OB)*(T<5)*(T>3)+(B=OB)*(T<5)*(T>2)-(T>8)*(B=OB)*(OA-A)*2*
(9.5-T)):PROCPE:ENDPROC
420 DEFPROCST:SOUND1,-15,60,3:PROCSC((12-SK)*L*2):ST=ST-.5:GCOL0,2:Q=FNPOS(X):
W=FNPOS(Y):T=(Q=0)*(YS/10-2)+(Q=3)*(YS/10-3)+(W=0)*(-XS/20-3.5)+(W=3)*(-XS/20-1.
5):OI=A:OJ=B:PROCTR(T):OI=I:OJ=J:GCOL4,0:ENDPROC
430 DEFPROCMOVE
440 G=INKEY0:IFG=65 J=J-(J<L)
450 IFG=90 J=J+(J>1)
460 IFG=44 I=I+(I>1)
470 IFG=46 I=I-(I<L)
480 IFA=I ANDB=J A=A+OI-I:X=X+130*(OI-I):B=B+OJ-J:Y=Y+130*(OJ-J):CHE=1
490 IFOJ=J ANDOI=I FORPAUSE=1TO10+10*SK:NEXT:ENDPROC
500 GCOL0,3:PROCSQ(I,J):G(OI,OJ)=G(I,J):GCOL0,0:PROCSQ(OI,OJ):GCOL0,2:PROCTR(G
(OI,OJ)):IFCHE GCOL4,0:PROCPE:CHE=0
510 OI=I:OJ=J:GCOL4,0:ENDPROC
520 DEFPROCSQ(X,Y):MOVE130*X-22,130*Y-25:PLOT0,0,120:PLOT81,114,-120:PLOT81,0,
120:ENDPROC
530 DEFPROCSC(P):S=S+P:VDU4:PRINTTAB(6,30);S:VDU5:ENDPROC
```

Hardware Review

Colourful

Hardware *Sakata SCP-800 Plotter* **Micro** General **Price** £206 **Supplier** Statacom Distribution Ltd, 18 Grove Road, Sutton, Surrey
Hardware *Penman*, **Micro** General **Price** £250 (£229 until Feb 1985), **Manufacturer** Penman Products Ltd, 8 Hazelwood Close, Dominion Way, Worthing, W. Sussex Tel. (0903) 209081

This week we get a chance to review a couple of the more colourful new peripherals for home and business micros Both offer multi-colour plotting of text and diagrams but achieve it in completely different ways. The Sakata plotter follows the proven format of a four-barrel printer head which moves horizontally across a sheet of paper whilst the paper is fed backwards and forwards to build up a diagram. The Penman takes the turtle concept so beloved of Logo users, adds technological sophistication and some built-in software to give a sort of robot drawing machine which scurries round a sheet of paper, drawing and writing as it goes

About two years ago Tandy started selling a cheap four-colour printer using ball-pen technology and drawing on 114mm wide roll paper This printer would also work as a small plotter and, at around £170, attracted a lot of attention from technical users who could not afford conventional flat-bed plotters around at that time Now the technology has been stretched still further to offer a general purpose plotter which can draw on paper or card, individual sheets of roll-feed, from post-card size to A4 in four colours and at a low price

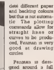
The plotter comes with Centronics and 5V serial ports, the serial port uses RS232 protocol hence BBC and Commodore 64 owners should be able to use that directly, if you can get hold of an appropriate cable A full RS232 adaptor is available for those of you who can't get on with the low voltage job When used as a printer the usual 96 ASCII characters are provided plus italic lettering, various special characters, and selectable international symbols such as the UK pound sign. The print speed is much slower than that of a dedicated printer of comparable price as each letter is drawn out individually each time. One advantage over conventional printers is that you get full control of the print size The smallest lettering comes out at 1 2mm high and you can get aobut 160 characters across an A4 page The largest character print is roughly sixty times this size Text can be printed horizontally, vertically, and even upside down.

Simple commands are used to control the printing and plotting process, with clear examples to explain each command. I soon found that I could control the output of the thing and felt quite confident that I could use it seriously Small stepper motors are used to drive the paper and pens hence the lines produced can have small steps giving an image much like that of a high resolution screen display. For most applications that should not prove a problem.

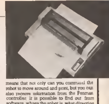
And now for something completely different The Penman plotter is certainly different it may well get voted the executive toy of the year It is much more than a toy, however, but I'm not quite sure just how much more In principle, the Penman works much like a Logo turtle and can in fact be used in this role There are three main parts to Penman, a power supply , control unit, and a motorised robot which can turn or move forwards and backwards In plotting mode three pens are carried on the robot and software automatically controls the movements of the drive wheels to position the appropriate pen where required Additional software is built-in to produce text (96 ASCII characters plus the UK pound) in sizes ranging from 1mm high to a whopping 127 mm high. Text can also be printed upwards, downwards, backwards, or forwards and slanted backwards or forwards giving an italic effect.

Paper size can go up to over A3. Larger plots can, in theory, be produced although they would have to be done in sections, moving the controller and robot between each section. A dark background is required for the paper as the robot uses the paper edge to align itself. It is possible to adjust the sensitivity of the edge-sensors to accomodate different paper and backing colours but this is not automatic The plotting commands allow for straight lines or curves to be produced, Penman is very good at drawing circles





Penman is designed around a full bi-directional RS232 interface which



means that not only can you command the robot to move around and print, but you can also receive information from the Penman controller It is possible to find out from software, where the robot is, what direction it's pointing in, which pen is in use, and so on. This may not seem to be a whole lot of use at first sight but holds a key to possible future uses of the machine It is possible, for instance, to use the Penman robot as a kind of mouse move the robot about by hand and use software to work out what the movements have been A software utilities disk, £28 is available for the BBC which uses the robot in this way (very crudely mind you) to select from the various example and software driver routines The Penman appears to have been developed with the BBC very firmly in mind and is well suited to it The disk utilities are for Basic and Logo, the Logo must be Acornsoft Logo on ROM. A connecting cable for the BBC costs £23, but you can make up your own quite easily

The utilities disk, which only works on BBC Version 2 Basic by the way, points to the main failing of the machine although it uses relatively simple commands to control the plotting operation it really needs additional software before it can be used seriously The robot is sensitive to any unevenness in the paper and slips easily on smooth paper, thus it tends to get out of alignment and must be reset periodically I tried to plot a globe with lines of latitude and longitude and ended up with two half-globes and a number of disassociated lines, even after forcing a reset after plotting each component line I think that it should be possible to produce quite high-accuracy plots but only through the use of some rather tricky software designed to overcome the hardware limitations. If you are not that worried about accuracy or have only simple plots to do then, after a bit of practice, you can get by using simple software

All in all, if you want a simple reliable printer/plotter which does just what you tell it then go for the Sakata. If you are not fussy about getting results quickly or want to impress someone then the Penman may be just the job The Penman may have a valuable role in education, leading from elementary line drawing to sophisticated multi-colour plotting using Logo or Basic. Meanwhile, I'm going to have another go at that globe before I have to give Penman back.

John Cochrane



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Competition Result

ZX Spectrum + competition

A ZX Spectrum + complete with Sinclair's Six-Pack, was up for grabs in the November competition run jointly by *Popular Computing Weekly* and Sinclair

The winner was Liam Winer, of Padbury Close, Gatcombe Park, Hilsea, Portsmouth. Liam correctly identified each game shown in the TV advertisements and also suggested *The Legacy* as a suitable name for the new Sinclair game we described.

For those of you still foxed, the answers are below

1. Learn to Read 3

2. The Hobbit

3. Castle Spellerous

4. Flight Simulation

5. Match Point

6. Vu-3D

7. Stop the Express

8. Tasword 2

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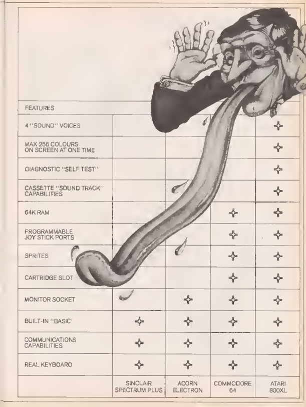
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The Review

David Kelly looks at the last twelve months in a blow-by-blow review of the year

The micro industry always seems to pack so much into each year. In 1984 Sinclair tried to give us the QL for several months without success. Imagine's imagination proved to be bigger than its bank balance. Jack Tramiel, after making Commodore a $1bn sales a year company, left and set Atari up in direct competition. A major blurt produced news of a new micro from Amstrad.

January: Sinclair announced a new 'professional' machine with an amazing 128K Ram and advanced 32-bit processor. Everybody got very excited about it and said that it made the Acorn BBC machine look a bit silly. The Coleco Adam which created such a stir – offering apparently exceptional value for money – in the US finally made the leap across the pond. CRL announced it had tied up a deal to produce a game based on *War of the Worlds*. And Jack Tramiel – Commodore's founder – quite suddenly, without any apparent motivation, quit amid dark rumours of boardroom splits and amicable departures.

February: Commodore reacted to the QL launch by hinting at some wonderful new machines, including the Commodore 264, a successor for the C64, priced around £400 – coincidentally the same price as the QL. Dragon suffered another trauma and GEC agreed to step in and handle the company's marketing. The first pre-production MSX machines were unveiled to selected press representatives. Nobody could tell them apart and all the manuals were in Japanese. The MOD, in an unbridled fit of enthusiasm, attempted to stifle a chap in Barnsley who invented an apparently foolproof method of stopping computer piracy. People nodded sagely and said it was probably something to do with the MOD not wanting you to be able to stop the authorities from tapping your phone.

A curious interlude. Elan Computers formally Samurai in its previous incarnation moved into home economics, renaming itself Flan. Its £199 Flan Enterprise computer was planned to be in the shops in April. Sinclair's appreciation of the passage of time became distorted again (funny, just like when the Spectrum came out) and people began to ask questions like – When am I going to get my QL? The question of how Sinclair was choosing to invest the interest from money taken from around 12,000 unfulfilled orders came up. Sinclair failed to see what all the fuss was about.

March. Timex admitted defeat and withdrew from the US market. It was generally thought that if it hadn't spent the best part of a year adding a new case and cartridge port to the Spectrum, the TS2000 would have stood more of a chance. Sinclair stood its ground and steadfastly refused to send anybody their QLs they had ordered. Some grumblings were heard when it became clear that Sinclair intended to hang on to the interest from everyone's money. For the first time the intelligence of using Microdrives in the QL was questioned and software houses bemoaned the machine's lack of a cassette port. Some began to look favourably upon Amstrad's proposed machine.

Imagine got into a wrangle with Marshall Cavendish publishers and it became apparent that all was far from well at Tithebarn House. Acorn launched its 6502 BBC second processor. Flan decided its new name wasn't quite as it had first imagined. Flan became Enterprise.

April. Spring arrived. So did the Amstrad – lots of machines to play with at the launch and the company announced that the CPC464 will be in the shops in June. General reaction was favourable. Pictures of the new Commodore 264 are seen and the design of its case is much admired. A 16K machine was also mooted from Commodore, but neither was available for investigation. British Home Stores embarassed Dragon considerably by selling off its remaining stocks of the Dragon 32 at £88. Questions were asked about the long term survival of Dragon Data.


Amstrad CPC464 micro

Jack Tramiel

The QL delay mystery is explained and people who had given their QLs up for lost made the alarming discovery that the first QLs that were to be sent out would be fitted with a built-in extra. This external Rom cartridge, Sinclair explained, contained a substantial chunk of the machine's Rom which it had failed to fit into the QLs original design. Sinclair tried to put a brave face on the whole episode – not entirely with success. Sinclair backed down on the issue of interest on money paid for computers not delivered and offered an RS232 printer cable peace offering. It was not a good month for Sinclair. No sign of the Samurai/Elan/Flan/Enterprise.

May: The Advance IBM-compatible micro arrived in W H Smith and looked good value. The trusty ZX Printer was discontinued. Acorn's Z80 second processor option for the BBC micro was announced. Dragon's troubles continued with speculation that Boots might follow BHS and drop the machine. Walls ice cream decided that a lolly called the Megabyte was a good idea. The first QLs, complete with value added extra 'dongle' went out 16 weeks after they were ordered. MSX machines began to loom and the idea of a 'standard' was much ridiculed. Employees of Commodore in the US continued to leave at a great rate, following the departure from the company of Jack Tramiel, its founder, in January.

June. Dragons became became an endangered species. First the company announced it planned an MSX machine and then it called in the receiver. The company also contrived to show a new twin-disc version of the Dragon in the same week it went bust. Carnell Software also went through the hoop. Acorn discontinued its BBC A micro and Sinclair, disturbed by adverse press reaction to its QL, put a great deal of effort into persuading people otherwise. Commo-

Of The Year



Sinclair's QL — the first home micro to use the 68008 chip

dore decided that its 264 machine should from now on be referred to in polite company only as the *Plus/4*

July: If June was bit dull then July was not. Jack Tramiel reached into his back pocket and pulled out $240m to buy Atari from Warners. Atari was busy losing $300m per year at the time so Warners were quite keen to get shot of it. Lots of rumours floated around to the effect that Tramiel had been bored and had bought Atari to see if he could use it to knock out his old firm, Commodore.

Imagine suddenly turned belly-up and became insolvent amid in-fighting, wheeling and dealing and recriminations, the like of which the industry had not before seen. Imagine always were good copy. This was some of their best. Dragon was sold off to Spain. Microdeal got caught up in a legal jungle when Activision claimed *Cuthbert in the Jungle* was a *Pitfall* rip-off.

August: Tramiel acted fast and purged most of the staff from Atari UK. The 16K Spectrum faded gracefully from the scene. Bits and pieces of info began to crawl out of the woodwork about Acorn's range of business machines. It began to be obvious that MSX wasn't going to make the impact this year that its supporters had hoped – machines looked likely to still be in short supply at Christmas. The cash flow problems struck again and Oric went out of its way to start rumours by announcing that its creditors were right behind it all the way.

We ran a great many stories about US Commodore 64 software houses tying up staggering deals with UK companies to distribute their sometimes mediocre, occasionally quite magnificent titles over here. Music and micros reared on the scene and the MIDI communications standard was mentioned rather a lot. Compunet was announced and Oric tried unsuccessfully to sue its ad agency. Dragon software companies fled in droves to other micros.

September: Philips was reckoned by some to have acquired an MSX licence. Automata surprised every one by releasing a terminally weird program featuring Ian Dury and E P Thomson. Those waiting for a Samurai/Elan/Flan/Enterprise machine discovered that they would have to carry on waiting.

Acorn announced its ABC range of business micros. Some observers found the machine excessively bulky. Others thought there must be cheaper ways of achieving more or less the same thing. Oric claimed that *Stratos* was not a brand of after shave.

The MSX manufacturers deemed it financially sound to drag a group of journalists off to the south of France for a gay day trip so they could miss the opening day of the *Personal Computer World Show*. The MSX machines turned out to be a smidgeon over-priced. By now, most people couldn't summon up much enthusiasm for the MSX spec.

October: Having failed in its attempt to sue its advertising agency, Oric thought it might as well have a hack at its distributor, Prism. More American Commodore 64 titles – yawn. We said Sinclair wouldn't launch a Spectrum in a new case with a better keyboard. Oric's major suppliers met and said the company was jolly good.



Members of Imagine's team

Commodore let slip that it plans a curious 128K machine that looks like a C64 and Plus/4 all rolled into one.

Ocean was not happy that news of its Frankie Goes to Hollywood game just slipped out. The deal still got signed. *Your Computer* scrapped its Christmas Show because it feared its exhibitors wouldn't make any money. Sinclair slipped out its Spectrum+ and some thought that there must be better ways of spending £50. Ocean and Sinclair carved up the Imagine leftovers.

November: Mastertronic caught a cold – its *Chiller* soundtrack upset Michael Jackson who thought he'd heard it somewhere before. The QL finally got discs. People using microdrives looked pleased. QL software still on the endangered species list. Still more US C64 material – how much more could there be? Oric wished it to be common knowledge that it had a goodly number of new machines stuffed up its sleeve. Included were a IBM PC-compatible desk and lap-held models, together with the Stratos which now had an IQ of 164. Coleco dithered and then decided that Cabbage Patch dolls were a better profit opportunity than computers.

Commodore and Atari continued to posture at one another and both announced 16-bit 68000-based machines for 1985. IBM took exception to the fact that the Advance ran most IBM software faster and cheaper. Discs for the Electron were announced and an up-market QL was planned by Sinclair for the New Year. Sinclair also reckoned that there might be some mileage in a portable version of the Spectrum.

December: Lots of people figured that lots of other people had broke into all sorts of electronic databases. BT was somewhat embarrassed. Tramiel continued his attack on his fellow manufacturers and slashed the price of the 800 XL machine.

Late December: the Enterprise looks likely to arrive just in time to miss Christmas. Acorn realised that it had bitten off more than it could chew with its American operation. Imagine employees all resurface – at Ocean, Beyond, Sinclair and Oric.

What about next year? 1985 looks set to be the year of the 16-bit micro. Commodore, Atari, and Acorn all look set to follow Sinclair's lead and produce advanced home micros. But we'll all have to wait and see.

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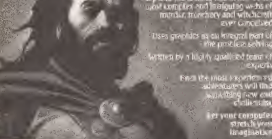
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Role-play

Program *Tower of Despair* **Price** £7.95 **Micro** Spectrum 48K **Supplier** Games Workshop, 25 Sunbeam Rd, London NW10

That Games Workshop has been involved in fantasy role playing games since their invention comes through clearly in this, their first computer adventure game

Whereas some programmers settle for single line place descriptions with shoddy graphics, *Tower of Despair* must be one of the most literate, atmospheric pieces of writing in the genre. This means that you are quickly drawn into the mood of the quest — in a forest you smell the pine, feel drowsy

It's like playing Dungeons and Dragons with an exceptionally good Dungeon Master

Tower of Despair also has the highest resolution graphics possible — printed ones! From time to time you are referred to pages in the accompanying booklet where you'll find suitably gothic illustrations

The adventure is a Quilled one — but you'd never have guessed if Games Workshop weren't so honest. The character set has been redesigned, with illuminated capitals and an archaic script though this could be unclear if your TV isn't too good.

Most importantly, though, the adventure itself is exciting, calling for both logical thought and the involvement of real role playing — and as it's in two parts there's plenty to be drawn in by. This is a classic despite the fact that it makes no great innovations. Instead it refines the traditional adventure to perfection.

John Minson

Roving Ram

Program *Magic Micro Mission* **Price** £6.95 **Micro** Commodore 64 **Supplier** Quicksilva, PO Box 6, Wimborne, Dorset

Magic Micro Mission is based on the TV program of the same name. The game is in two parts, the first part being a pretty basic shoot 'em up. You have to destroy all six waves of the defending ships before you are allowed to land and go on to the next stage, which comprises a very simple maze. It is supposed to take place on a circuit board inside the Magic Micro

You have to remove all the faulty Rom chips on the board, while avoiding two patrolling Ram chips and a couple of resistors. Once you have completed your task, on one circuit board, you are moved on to the next.

The game is basically very simple but despite this, quite tricky. Still, the straightforward action soon becomes rather repetitive and interest starts to wane. Both sound and graphics are likewise rather basic, although competent. An uninspiring package.

Richard Corfield

Pythonesque

Program *Arnold Goes To Somewhere Else* **Price** £5.50 **Micro** Amstrad CPC 464 **Supplier** Nemesis Software, 10 Carlow Road, Ringstead, Kettering, Northants

One of the nicest things about the release of a new micro is that new small companies that couldn't have possibly competed in the crowded and cut-throat Spectrum/Commodore market, have a chance to make a name for themselves.

One such is Nemesis whose Arnold series of text adventures are like a breath of fresh air amongst the more usual, stolid and pedestrian fare. They are also very cheap

Arnold Goes To Somewhere Else is the follow up to *The Trial Of Arnold Blackwood* (also available on the Dragon). It is on the whole not a difficult

continued over the page

Hot spot

Program *Macbeth* **Price** £14.95 **Micro** Commodore 64 **Supplier** Creative Sparks, 296 Farnborough Road, Farnborough, Hants

From the brilliant opening graphics sequence, complete with thunder and lightening and genuinely spooky representation of the Three Weird Sisters on the blasted heath, you can tell that "Macbeth" is something special.

This four-adventure package started life as an unusual aid to getting to grips with the Shakespeare classic, but the result is a product which is a delight to play even if "O" Level English is a distant memory

Bagpipe music (*Scotland the Brave* and *Amazing Grace*) helps to set the original scene which corresponds to the opening of the play itself. Incidentally pleas for help on screen lead to hints on where to look in the edited version of the play supplied with the game — surely the best written documentation for any computer game yet! — and the plot line follows the text closely

Text input is highly sophisticated with a wide and, appropriately archaic vocabulary. Don't "kill" that menacing mercenary, "unseam" him.

Three of the adventures are text with graphics, one is the equivalent of an arcade game and the loving care used in all of them for graphics, sound effects and intelligent use of the story is unmistakable

For the most part you're Macbeth, but in Game 2 you play Lady M arranging the murder of your sovereign.

There's a psycho-analysis program after each phase, which can be both funny and illuminating, but watch out for the bill.

In case you haven't gathered, I loved this package and it is difficult to leave it alone.

Birnam Wood appears to have come to Dunsinane and, unless I'm much mistaken, that's Macduff down the passageway with a very nasty look in his eye

Barbara Conway

adventure, although I have become completely stuck at one point. Mainly because there are lots of location, their descriptions are more terse than I would like but what makes the program stand out is the imagination that has gone into its design. The scene of the adventure is the underworld, or the astral plains or somewhere else. The locations read like a Dante-esque nightmare spiced with some quite erudite, mythological and mystical knowledge. However, just as you are getting used to this you are suddenly and completely wrong-footed by a burst of Monty Python humour or an awful groaner of a joke. I found it all immensely lively and enjoyable.

The programming is similarly well thought out, responses are fast, you are allowed to 'take' items by just typing the object name and there is a very useful on-screen record of the last 10 or so moves you have made. Although there are no pictures the use of sound is the most original and atmospheric I have heard on a micro and greatly complements the feel of the game — I wish there was more of it.

Besides the title is just wonderful. Says it all, really.

Tony Kendle

Program *Zim Sala Bim* **Price** £7.95 **Micro** Commodore 64 **Supplies** Melbourne House, Castle House, Castle Yard, Richmond, Surrey

This is a slightly unusual adventure for Melbourne House, which normally concentrates on intricate language parsers, plus varying degrees of graphics, for its programs.

But the attraction of *Zim Sala Bim* is mainly in the graphics and sound, with a very basic two-word instruction capability.

You take the title role an Arabic Robin Hood character whose task is to break into the Sultan's palace and steal gold to buy food for his starving neighbours. Zim is the animated character on screen in a number of different scenes — if you can first find your way from the desert into the palace grounds — which are drawn in admirable 3D detail.

Despite the limitations of the text input there are a number of intriguing puzzles for Zim to grapple with as he makes his way to the Sultan's inner sanctum and the treasure. The character himself can move at varying speeds (I preferred to have him galloping along against the crawling pace he assumes at start-up) and, even if you are a thief, I wouldn't advise you to try gratuitous murder.

Zim Sala Bim is not for very advanced adventurers, but acolytes will enjoy it — particularly working out what to do with the treasure when you finally get it. The graphics are really the most interesting part of the program.

Barbara Conway

Monkey stuff

Program *Zany Kong Junior* **Price** £7.95 **Micro** BBC B **Supplier** Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX

Zany Kong, it seems, has been kidnapped by the evil Morris (not a very threatening name) and locked in a steel cage. You have to move Zany up and down vines to collect keys before a bonus figure reaches zero.

Baddies include snappers (like false teeth with handles) and Aardvark Birds which fly around and drop lethal electric spikes. You can retaliate with apples and pineapples which can be dropped on to their heads.

The first screen is much more difficult than it looks, and the bonus runs out pretty quickly. Your monkey has to climb up and down — vines when they are close together. Snappers also run about on the vines and generally get in the way.

Once you reach the key Morris pushes Zany off the screen and the game moves up a level and obstacles grow. You'll need a lot of skill and the interest level remains pretty high even after a few plays.

Tara and Harriet Alabaster

Time traveller

Program *Space Pilot* **Price** £7.95 **Micro** BBC B **Supplier** Superior Software Ltd., Dept.C, Regent House, Skinner Lane, Leeds LS7 1AX

Like one of those tests where Captain Kirk has to prove his skill to some alien super being who controls the setting, time and action. Your first scenario is to command a fast-firing space ship which slips through the clouds seeking the enemy. You are returned to 1918 with biplanes dropping crude (but horribly effective!) bombs on you.

Occasionally you can catch a falling pilot and you win a bonus 1000 points. Clear all the biplanes and shoot down the zeppelin then, whoosh! the screen wipes and the game-master alien throws you through a time-warp to World War II where Spitfires are the enemy's disguise and so on through the time zones.

The game is essentially asteroids in a new colourful and exciting form. The action is fast with good animation and some shimmering clouds. It is also great fun!

Dave Watterson

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"I would like to thank all involved for making such an interesting game, especially the riddles" NORMAN SCOTTER.

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"I hate this game. I seem to be missing all my favourite TV shows" ADAM BOWLES. *(Poor old Adam)*



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No cash

Program *Fruit Machine* **Micro** Amstrad CPC464 **Price** £8.95 **Supplier** Amsoft, Brentwood House, 169 Kings Road, Brentwood, Essex.

The popular pub money grabber, the fruit machine, has been translated for the Amstrad, obviously losing in the process much of its appeal — the actual winning of money.

The object of the game is simple: make as much profit as possible from an imaginary £5 stake, and hopefully making the high score table of successful gamblers.

Pressing space sets the reels in motion, and if you are lucky they will come to rest on a combination. Then you can either collect your winnings or gamble and often lose them.

Other alternatives include 'nudges' trying to increase your win by moving the reels into a better position. If you have won over 60p you can try something called the 'Winner Spinner' feature.

Home micro *Fruit Machine* games are getting almost as difficult to figure out as their real 'pub' counterparts.

In the end the experience remains hollow though, because the program won't cough up proper cash when you win.

Greg Pearson

Reborn

Program *Pitfall II. Lost Caverns* **Price** £8.99 **Micro** Spectrum 48K **Supplier** Activision (UK) Inc., 15 Harley House, Marylebone Road, London NW1 5HE

Among all the Willys, Wilfs and Wallys this could be just another Tom, Dick or in this case Pitfall Harry making his Spectrum debut.

There's a lot of Indiana Jones about our hero as he runs, climbs, jumps, swims and even hitches lifts on passing balloons in the 'Lost Caverns' — really a series of platforms forming a vertical maze, inevitably filled with deadly creatures.

The caverns are extremely large though and mapping them, aided by a Hold key is vital if you're to develop a strategy. It's not merely a question of finding your way as the game treats loss of life in a fresh fashion.

You gain points for various discoveries, plus gold collected en route, and you also pass magical healing places, marked by crosses. Make a fatal contact and your ghost returns to the last one of these touched to be re-born, points draining away all the while. It pays never to be too far from a cross therefore.

Harry is amusingly energetic and the strategy elements are challenging, but there appears to be a bug when using the balloons which necessitates a complete re-*Load*. It's a pity because despite small characters and a general lack of sophistication, I found it all quite addictive, though somewhat overpriced.

John Minson

Shoot-out

Game *Black Hawk* **Price** £7.95 **Micro** Commodore 64 **Supplier** 896 Farnborough Road, Farnborough, Hampshire

A game for separating the men from the boys which involves both action and strategic skills. As commander of the Black Hawk, the most advanced strike-aircraft yet created, your task is to fly to a distant group of islands and destroy the enemy airfield. On the way, you can expect some opposition from fighter planes, helicopters, missiles and tanks.

To succeed at *Black Hawk*, you need to master two operating modes. In the attack mode, the plane's onboard computer helps you launch missiles at enemy installations including anti aircraft guns, missile launch-pads and command posts. A switch to the defence mode involves you in a straightforward shoot-out with any enemy forces that managed to survive your attack wave.

Various goodies can be collected on the way: double cannons, bombs, etc, but be warned — any fall-off in the pilot's ratio of bombs on target and they will be taken away. It's enough to make grown men weep. Although the scoring is somewhat complex, *Black Hawk* is attractively packaged, and the eight page instruction booklet is easy to follow. A lesson for other games manufacturers.

Tom Hussey

Anarchic

Program *Skooldaze* **Price** £5.95 **Micro** Spectrum 48K **Supplier** Microsphere Computer Services Ltd., 72 Rosebery Avenue, London N10 2LA

If the Bash Street Kids went to Grange Hill then were reduced in size and placed in a microchip, the result could be *Skooldaze*. That is the only way to describe this wild, anarchic, hilarious game.

The screen is a window into this seat of learning (learning?) and centre stage stands Eric, who has to retrieve his report from the headmaster's safe or face a fate worse than the cane. The method of saving his skin is so unlikely, involving flashing school shields, antique teachers and avoiding being given lines, that it suffices to say you won't succeed without a lot of experimentation.

Skooldaze is so pleasing because of its attention to detail. Not only does the day divide up into various lessons — and woe betide if you're caught out of class — but the staff and pupils have their own individual characters: ask educational questions and make fatuous comments via speech bubbles.

In short it's just like real school life — and you can even personalise it by renaming the cast!

The options available range from writing on blackboards to firing catapults, so it's not an easy game to play, but it's quite unique, totally endearing and unlike Eric, this gets top marks.

John Minson



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Sleigh ride

Festive fun for any Spectrum from the pen of ***Peter Millar***

Here is a short program that is guaranteed to break the ice at your Christmas party. It prints a graphic of Santa Claus riding across the rooftops then plays *Jingle Bells*, after which 'Merry Christmas' is flashed up on the screen. Put it up, then watch your TV and Spectrum go flying out of the window after 10 minutes.

Program Notes

15-30	User Defined Graphics
30-95	Sets up screen and movement
100-135	Plays tune
140-155	Flashes up message
160-365	UDG data

```
   5 REM  SANTA © P MILLAR
  10 PAPER 1  BORDER 1  CLS
  15 REM USER DEFINED GRAPHICS
  20 FOR i=1 TO 21
  25 FOR a=0 TO 7  READ x  POKE
USR CHR$ (i+143)+a,x. NEXT a
  30 NEXT i
  35 REM SET UP SCENE
  40 INK 0  PRINT AT 15,0,"
  45 PRINT AT 16,0,"
  50 PRINT AT 17,0,[redacted]"
  55 FOR t=1 TO 10
  60 INK 6  CIRCLE 210,140,t. NE
XT t
  65 LET h=256  FOR v=104 TO 175
PLOT (RND*h),v  NEXT v
  70 LET a=1
  72 REM ENTER NEXT GROUP OF LET
TERS IN GRAPHICS MODE
  75 INK 2  FOR y=1 TO 19. PRINT
 AT 9,y,"  AB
           TCFIJIIIIIIK
           TDG T    DNML
           TEM T    P R
          "UUUUUUU  Q 5
  80 LET a=a+1
  85 IF a=50 THEN GO TO 140
  90 PAUSE 10  NEXT y
  95 INK 0
 100 REM TUNE
 105 BEEP .25,6.6  BEEP .25,6.6
BEEP .4,6.5  PAUSE 7
 110 BEEP .25,6.5  BEEP .25,6.5
BEEP .4,6.5  PAUSE 7
 115 BEEP .2,6.6  BEEP .26,2.5
BEEP .3,2.5  BEEP .3,4.5  BEEP .
35,6.5  PAUSE 19
 120 BEEP .3,7.5. BEEP .3,7.6  B
EEP .4,7.5  PAUSE 1  BEEP .2,7.5
  BEEP .25,7.5  BEEP .3,6.5  BEE
P .3,6.5
 125 PAUSE 10  BEEP .2,6.5  BEEP
 .2,6.6  BEEP .4,6.5  BEEP .4,4.
6  PAUSE 1  BEEP .25,4.5  BEEP .
4,6.5  PAUSE 1  BEEP .65,4.6
 130 PAUSE 90  BEEP .65,9.5
 135 GO TO 75
 140 FLASH 1  INK 6  CLS  PRINT
AT 4,1,"
Y HAPP
"
 145 FLASH 1  PRINT AT 12,4,"
:MAS   >
 150 PAUSE 250
 155 FLASH 0. INK 0  CLS . GO TO
40
 160 REM UDG DATA
 165 DATA 0,0,0,1,99,248,262,96
 170 DATA 06,254,250,255,254,254
,124,60
 175 DATA 06,126,255,255,255,255
,255,255
 180 DATA 255,255,255,256,256,12
7,63,31
 185 DATA 0,126,126,126,126,126,
126,0
 190 DATA 0,0,0,128,224,248,30,7
 195 DATA 0,0,0,0,0,252,252,262
 200 DATA 12,12,12,12,12,15,15,0
 205 DATA 0,0,0,0,0,6,0,255
 210 DATA 0,0,0,0,7,4,4,256
 215 DATA 33,191,63,6,24,60,126,
255
 220 DATA 255,255,224,192,192,12
8,128,0
 225 DATA 1,3,7,255,255,255,255,
255
 230 DATA 0,0,0,255,255,255,255,
255
 235 DATA 0,0,0,63,127,255,255,2
55
 240 DATA 255,255,956,127,63,31,
13,17
 245 DATA 64,190,54,25,9,0,0,0
 250 DATA 255,255,255,255,255,10
8,54,54
 255 DATA 54,54,198,216,144,0,0,
0
 260 DATA 4,4,4,4,4,4,4,4
 265 DATA 255,0,0,0,255,0,0,0
 300 SAVE "santa" LINE 5
```

Everything in its place

Part two of **Brian Cadge's** graphics command program for the CPC 464

This week we finish off with the rest of the assembler listing and some more detail about the workings of the program itself.

The | *Place* command simply replaces a previously stored image at the character position given. The coordinates, *xpos* and *ypos* are as used by the *Locate* command, the program automatically takes into account the current mode.

These commands are fairly idiot proof — you cannot display an image which has not yet been defined. However, take care to keep *Himem* right, as defining more images than you have reserved space for could cause basic to be corrupted.

The advantages of using these new commands over using normal UDG characters is that they can be different shapes and can contain as many colours as the mode allows. They also operate a lot faster than using *Print*, which is useful in fast games.

Moving on to the workings of the program. The program begins by defining the new commands, done by setting up the registers and making a call to the Firmware at $BCD1 which Logs an RSX onto the operating system.

When a command is encountered, control is passed to the routine via the jump table. The A register than contains the number of parameters passed in the command, and IX points to the last parameter. IX+2 points to the last but one and so on.

The IY register is undefined when the RSX is in Ram.

Two other Rom routines are used. The first is at $BC1A which returns the screen Ram address of the character position given in HL (H=column, L=row), top left of the screen at position (0,0). This is needed as hardware scrolling used on the Amstrad means that the screen doesn't always start in the same place. The other routine used is at $BC26, which returns the address in HL of the screen byte which is displayed below the current one addressed by HL. This is needed for the same reason as above.

To get the program going on your machine, type in the Basic loader program and *Save*, then *Run* it. If all goes well you should get *Ready*, and you can now *New* the program and load or type in a program to usew the new commands.

It is interesting to note that there is one built in RSX command — try typing | BASIC.

```
A71B 22CEA7     450        LD   (VDU),HL
A71E CD72A7     460        CALL FETCH
A721 C9         470 EXIT   RET
A722 DD4604     480 PLACE  LD   B,(IX+4)
A725 04         490        INC  B
A726 FE03       500        CP   3
A728 20F7       510        JR   NZ,EXIT
A72A 21C8A7     520        LD   HL,STACK
A72D CD53A7     530        CALL GETADR
A730 1A         540        LD   A,(DE)
A731 32D0A7     550        LD   (HORL),A
A734 1B         560        DEC  DE

A735 1A         570        LD   A,(DE)
A736 32D1A7     580        LD   (VERL),A
A739 1B         590        DEC  DE
A73A 1A         600        LD   A,(DE)
A73B FE55       610        CP   85
A73D 20E2       620        JR   NZ,EXIT
A73F DD7E02     630        LD   A,(IX+2)
A742 3D         640        DEC  A
A743 67         650        LD   H,A
A744 DD7E00     660        LD   A,(IX+0)
A747 3D         670        DEC  A
A748 6F         680        LD   L,A
A749 CD1ABC     690        CALL #BC1A
A74C 22CEA7     700        LD   (VDU),HL
A74F CDA3A7     710        CALL RESTOR
A752 C9         720        RET
A753 25         730 GETADR DEC  H
A754 10FD       740        DJNZ GETADR
A756 54         750        LD   D,H
A757 5D         760        LD   E,L
A758 01F000     770        LD   BC,240
A75B 37         780        SCF
A75C ED42       790        SBC  HL,BC
A75E 22CCA7     800        LD   (STORAGE),HL
A761 C9         810        RET
                820
A762 C5         830 GETCHR PUSH BC
A763 E5         840        PUSH HL
A764 0608       850        LD   B,8
A766 7E         860 GLOOP  LD   A,(HL)
A767 12         870        LD   (DE),A
A768 7C         880        LD   A,H
A769 C608       890        ADD  A,8
A76B 67         900        LD   H,A
A76C 13         910        INC  DE
A76D 10F7       920        DJNZ GLOOP
A76F E1         930        POP  HL
A770 C1         940        POP  BC
A771 C9         950        RET
                960
A772 ED5BCCA7   970 FETCH  LD   DE,(STORAGE)
A776 2ACEA7     980        LD   HL,(VDU)
A779 ED4BD1A7   990        LD   BC,(VERL)
A77D 41        1000        LD   B,C
A77E C5        1010 VLOP   PUSH BC
A77F E5        1020        PUSH HL

A780 ED4BD0A7  1030        LD   BC,(HORL)
A784 41        1040        LD   B,C
A785 CD62A7    1050 HLOP   CALL GETCHR
A788 23        1060        INC  HL
A789 10FA      1070        DJNZ HLOP
A78B E1        1080        POP  HL
A78C CDC4A7    1090        CALL DOWN8
A78F C1        1100        POP  BC
A790 10EC      1110        DJNZ VLOP
A792 C9        1120        RET
               1130
A793 C5        1140 PUTCHR PUSH BC

A794 E5        1150        PUSH HL
A795 0608      1160        LD   B,8
A797 1A        1170 PLOP   LD   A,(DE)
A798 77        1180        LD   (HL),A
A799 7C        1190        LD   A,H
A79A C608      1200        ADD  A,8
A79C 67        1210        LD   H,A
A79D 13        1220        INC  DE
A79E 10F7      1230        DJNZ PLOP
A7A0 E1        1240        POP  HL
A7A1 C1        1250        POP  BC
A7A2 C9        1260        RET
               1270
A7A3 ED5BCCA7  1280 RESTOR LD   DE,(STORAGE)
A7A7 2ACEA7    1290        LD   HL,(VDU)
A7AA ED4BD1A7  1300        LD   BC,(VERL)
A7AE 41        1310        LD   B,C
A7AF C5        1320 PVLOP  PUSH BC
A7B0 E5        1330        PUSH HL
A7B1 ED4BD0A7  1340        LD   BC,(HORL)
A7B5 41        1350        LD   B,C
A7B6 CD93A7    1360 PHLOP  CALL PUTCHR
A7B9 23        1370        INC  HL
A7BA 10FA      1380        DJNZ PHLOP
A7BC E1        1390        POP  HL
A7BD CDC4A7    1400        CALL DOWN8
A7C0 C1        1410        POP  BC
A7C1 10EC      1420        DJNZ PVLOP
A7C3 C9        1430        RET
               1440
A7C4 0608      1490 DOWN8  LD   B,8
A7C6 CD26BC    1460 DWLP   CALL #BC26
A7C9 10FB      1470        DJNZ DWLP
A7CB C9        1450        RET
               1490
A7CC           1500 STORAG DEFS 2
A7CE           1510 VDU    DEFS 2
A7D0           1520 HORL   DEFS 1
A7D1           1530 VERL   DEFS 1
A7D2           1540 BSBUF  DEFS 4
```

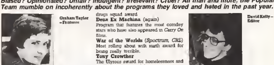


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The Popular Vote

Biased? Opinionated? Unfair? Indulgent? Irrelevant? Cruel? All than and more, the Popular Team mumble on incoherently about the programs they loved and hated in the past year.



Graham Taylor – Features

David Kelly – Editor

The least worst best collection

Tir na Nog, (*Spectrum, Gargoyle*)
Award for best animated hair in any adventure game

Ghostbusters (*Commodore 64, Activision*)
Game I'd play even if I didn't have a TV picture award.

Caesar's Travels (*Commodore 64, Mirrorsoft*)
Ah, gurgle, gurgle, diddums award for all round niceness.

Elite (*BBC, Acornsoft*)
Well, I didn't say there weren't any good games on the BBC award.

Knight Lore (*Spectrum, Ultimate*)
Best reason to give up trying to learn machine code programming in despair award for effortless superiority

Deus Ex Machina (*Spectrum, Automata*)
Program most likely to be reported to the drugs squad award

Deus Ex Machina (again)
Program that features the most comdey stars who have also appeared in *Carry On* films.

War of the Worlds (*Spectrum, CRL*)
Most rolling about with mirth award for being really terrible.

Tony Crowther
The Ulysses award for homelessness and the which company did you say you were from?' special PR persons award.

Strip Poker (*Commodore 64, US Gold*)
Most ludicrous emotion to try to evoke with a computer program award.

Raid over Moscow (*Commodore 64, US Gold*)
The fluoride in the drinking water award for loony right-wing paranoia.

Impossible Mission (*Commodore 64, CBS*)
Donald Sinden award for overacting from a computer program for the rendition of 'kill him my robots' at various points in the game

Psytraxx (*Spectrum, The Edge*)
Samuel Beckett 'life is just the same thing over and over again without getting any better' award for having thousands of screens all almost exactly the same.

QL Chess (*QL, Psion*)
It may take 27 attempts before it will load, but it's worth it award.

Chiller (*Commodore 64, Mastertronic*)
George Harrison *My Sweet Lord* most obvious copyright infringement award for the music

Christina Erskine – News

Some games I've enjoyed. In reverse order

7 Caesar the Cat (*Commodore 64, Mirrorsoft*)
I don't know why I find Caesar the most endearing computer sprite I've ever come across I don't even like cats that much.

6 Fantasia Diamond (*Spectrum, Hewson Consultants*)
Fairly sophisticated, fun, and moderately interactive graphics and text adventure Though how it took me a week to realise that *Put battery into toy robot* was more acceptable than *Galvanise robot, Insert battery, Energise toy robot,* etc, I'll never understand.

5 Ghostbusters (*Commodore 64, Activision*)
I still can't believe that my weedy little Commodore 64 is producing that incredible music and speech synthesis. Friends and flatmates are all amazed, and have great fun pressing the space bar at inappropriate moments The game? What game?

4 Football Manager (*all main micros, Addictive Games*)
Well, all right, it's hardly a game of 1984 but still about the best use I can think of for a home computer How else are Crystal Palace ever going to make the first division?

3 Trashman (*Spectrum, New Generation*)
Puts the romance back into bins.

2 Summer Games (*Commodore 64, Epyx/Quicksilva*)
One of the most realistic of *Track and Field* type games, especially as success doesn't depend on thrashing the joystick into an early grave. Wonderful graphics and some rather nice sound effects — specially when

1 Knight Lore (*Spectrum, Ultimate*) In my view the cleverest program of the year with tremendous 3D graphics The visual puzzles are wonderful and the lead character's periodic transformations appear quite disconcerting

2 Trashman (*Spectrum, New Generation*) It may look a bit dated now, but at the time I liked it very much Unusual plot, clever graphics and it is not at all as easy as it looks

3 Witches Cauldron (*Spectrum, Mikro-Gen*) I'm not quite sure what's happened to Mikro-Gen, but they've suddenly started producing some good stuff — *Pyjamarama* was good, but the graphics in this adventure are very colourful and neat Besides I always wanted to be a frog

4 Dallas Quest (*Commodore 64, Datasoft via US Gold*) Very silly adventure Sue Ellen hires you as the best detective in Texas I tried to shoot the cat and a flag appeared from the gun which said 'bang'

5 Flip & Flop (*Commodore 64, Statesoft*) Much more interesting than *Q bert,* this confusing topsy-turvy platform game is gymnasts land flat on their backs, for some reason.

1 Sherlock (*Commodore 64, Melbourne House*)
There is something enormously refreshing about the lack of rocky/desolate/wooded/mystical landscapes littered with swords/gems/keys or even toy robots in *Sherlock.* Furthermore, you get a rattling good yarn with plenty of atmosphere and frustration and enlightenment in about equal measures.

Dodo of the Year
War of the Worlds *(CRL)*
Great idea — but the implementation of the theme tune on the Spectrum was laughable and all those reams of text at the beginning were so tedious. And, as far as I'm concerned, the idea of rescuing "Carrie — the girl you love" was implausible, to say the least.

The Popular Vote

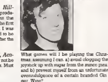
quite deceiving. Its designer was an architect and it's not easy. Very frustrating.

6 Yacht Race (*Spectrum, Hill-MacGibbon*) Hill-MacGibbon has produced a number of excellent simulations: this one dinghy sailing. I tried sailing for the first time quite recently and discovered I was pretty useless. This program proved to be quite useful (unfortunately that was after the event).

7 Ghostbusters (*Commodore 64, Activision*) OK,OK. So the gameplay may not be hot, but the music is, well, marvellous. Must be the catchiest tune of the year.

Dodo of the Year

There was unprecedented competition this year for the most spectacular program dodo for the 12 months — my picks would be *Revenge of the Killer Tomatoes* from Visions (great title, shame about the game) and the official version of *Pac-Man* from Atari who at one point reckoned that people would cough up £14.99 for the Spectrum version of a game they had a thousand versions of already.



John Cook — Software

What games will I be playing this Christmas assuming I can: a) avoid clogging the joystick up with sugar from the mince pies and b) prevent myself from an unfortunate overindulgence of a certain branded Ginger Wine?

Elite (*Acornsoft*, BBC B) comes top of the pile by at least a mile and a half. None of this 'goodwill to all Thargoids' rubbish in the Cook household, I can tell you. Easily the best game this year. When you come down from that adrenalin high, the next best thing you could do is lie back, turn down the lights, turn up the music and tune into the collective unconcious with **Psychedelia** (*Llamasoft, C64, Vic, C16*).

More family fun after the Queen's Speech with **Ghostbusters** (*Activision CBM64,Spectrum*). Play the game, see the film, wear the T-shirt, eat the book.

Something to put up on Christmas morning: **Impossible Mission** (*Epyx, CBM64*). The realistic screams of the hero dying yet another painful death should have the whole family awake in no time.

For Boxing Day, when you are bloated through excessive consumption, less energetic and more intellectual stimulation is required. Try **Tir Na Nog** (*Gargoyle, Spectrum*), and let Cuchulainn do the walking for you in this Celtic adventure. It looks pretty, too!

Drelbs (*US Gold, CBM64*) may provide welcome relief from alien zapping, as you hop across the atomic grid and through the dark corridor to free your Drelbish brethren. This is a game as quirky and delightful as **Splat** (*Incentive Software, Spectrum*) with, I suspect, an appeal as long lasting.

Finally, if you've been very, very good; eaten your greens, helped old ladies across the road, etc, you might just find a Defender machine in your stocking. But if you've been bad, it's 'Mutant Martha meets, mashes and mutilates the Manic Muffins' for you, m'lad.

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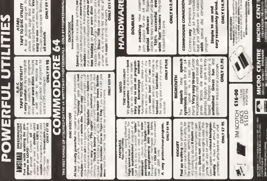
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In the deep mid-winter

Another seasonal offering for the BBC B written by **Philip Woolley**

Here is a program that can be put up on the computer just after Christmas dinner, in between opening the presents and the Queen's speech.

It draws an appropriate wintery scene in *Mode 2*, and plays some Christmassy music. The music can be repeated afterwards by pressing any key. Happy Christmas.

Program Notes

Procchurch — Draws church
Proctrees — Draws the trees
Procset up — Defines the VDU 23 characters
Procmusic — Plays the music

```
10 ON ERROR RUN
20 MODE 2
30 FOR S=1 TO 250
40 GCOL 0,8:X=RND(1280):Y=RND(1024)
50 PLOT 69,X,Y:NEXT
60 FOR S=1 TO 250
70 GCOL 0,15:X=RND(1280):Y=RND(1024)
-80PLOT 69,X,Y:NEXT
90 PROCSETUP:PROCTREES
100 GCOL 0,7
110 MOVE 0,200:DRAW850,0
120 PLOT 85,0,0
130 MOVE 850,0:DRAW 1280,150
140 PLOT 85,1280,0
150 MOVE 400,100:DRAW 1200,100
160 PLOT 85,850,0
170 COLOUR 3:PRINTTAB(10,4)CHR$237
180 PRINTTAB(10,5)CHR$238;CHR$239
190 PRINTTAB(10,6)CHR$240
200 PRINTTAB(9,3)"\";TAB(9,6)"/"
210 PRINTTAB(12,3)"/";TAB(12,6)"\"
220 COLOUR 5:PRINTTAB(5,13)"MERRY
XMAS":COLOUR3
230 VDU 23;8202;0;0;0;
240 PROCCHURCH
250 PROCMUSIC:END
260 G=GET:PROCMUSIC
270 DEFPROCSETUP
280VDU 23,230,24,24,24,24,24,24,24,2
290 VDU 23,231,24,60,126,255,255,
255,255,255
300 VDU 23,232,255,255,255,255,255,
255,255,255
310 VDU 23,233,0,0,0,0,1,3,0,1
320 VDU 23,234,3,7,15,1,3,7,15,31
330 VDU 23,235,0,0,0,0,128,192,0,128
340 VDU 23,237,0,0,0,0,1,1,1,1
350 VDU 23,238,1,2,28,120,24,4,7,3
360 VDU 23,239,0,128,112,60,48,64,
128,0
370 VDU 23,240,3,3,3,3,0,0,0,0
380 VDU 23,236,192,224,240,128,192,
224,240,248
390 ENDPROC
400 DEFPROCTREES
410 COLOUR 1:PRINTTAB(3,25)CHR$230
420 PRINTTAB(3,26)CHR$230
430 PRINTTAB(3,27)CHR$230
440 COLOUR 2:PRINTTAB(3,24)CHR$232
450 PRINTTAB(3,23)CHR$231
460 PRINTTAB(2,23)CHR$233
470 PRINTTAB(2,24)CHR$234
480 PRINTTAB(4,24)CHR$236
490 PRINTTAB(4,23)CHR$235
500 COLOUR 1:PRINTTAB(7,27)CHR$230
510 PRINTTAB(7,28)CHR$230
520 COLOUR 2
530 PRINTTAB(7,25)CHR$231
540 PRINTTAB(7,26)CHR$232
550 PRINTTAB(6,25)CHR$233
560 PRINTTAB(6,26)CHR$234
570 PRINTTAB(8,26)CHR$236
580 PRINTTAB(8,25)CHR$235
590 ENDPROC
600 DEFPROCMUSIC
610 RESTORE 620:REPEAT:READ N,L:
SOUND 1,0,0,1:SOUND 2,0,0,1:SOUND
3,0,0,1:SOUND 1,-15,N,L:SOUND 2,-
15,N-48,L:SOUND 3,-15,N,L:UNTIL
N=0:GOTO 260
620 DATA 129,15,13',5,129,10,117,25,
129,15,137,5,129,10,117,25,157,20,
157,10,145,25,149,20,149,10,129,25,
137,20,137,10,149,15,145,5,137,10,
129,15,137,5,129,10 ,117,25,137,20,
137,10,149,15,145,5,137,10,129,15,
137,5,129,10
630 DATA 117,25,157,10,157,10,157,
10,169,10,157,10,145,10,149,25,165,
25,149.10 ,129,10,117,10,129,10,121,
10,109,10,101,45,0,0
640 DEFPROCCHURCH
650 VDU 23,241,24,60,60,60,60,60,60,
660 GCOL 0,4
670 MOVE 600,100:DRAW 600,230
680 PLOT 85,950,230
690 DRAW 950,100:PLOT 85,570,100
700 MOVE 950,300:DRAW 1050,300:PLOT
85,950,100
710 DRAW 1050,100:PLOT 85,1050,300
720 DRAW 1000,365:PLOT 85,950,300
730 PRINTTAB(10,26)CHR$241;CHR$241;
CHR$241;CHR$241
740 PRINTTAB(15,25)CHR$241
750 ENDPROC
```

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Present alms

Help Santa collect his presents on the Dragon 32, with the help of ***Darren Howe***

Program Notes	
Line No	
40-70	Introduction
40-110	Variable set-up
120-160	Display data
170-230	Santa move (machine code)
240-290	Present move (machine code)
300-380	Screen set-up
380-480	Main program
460-470	Update score
480-530	Score routine
540	Out of time routine

Santa's Present Catch is a half machine code, half Basic program. You are Santa, who appears on the right of the screen with his arms outstretched to catch presents.

The presents fly from left to right across the screen one at time. Santa must catch ten presents to obtain a score — which depends on the skill level chosen, and time taken to complete this task. You have only two minutes to collect ten presents.

The number of presents you have caught is shown at the top of the screen and both of Santa's arms must be touching the present to catch it. Finally, a joystick is used to move Santa up and down. Good luck!

```
10 REM $SANTA'S PRESENT CATCH $
20 REM $WRITTEN BY DARREN HOWE$
30 REM $KENT.                 $
40 CLS0 PRINT      SANTA'S PRESENT CATCH" PRINT@227, WHICH SKILL LEVEL [1-3] ''.
'SCREEN0,1
50 A$=INKEY$ IF A$="" THEN50 ELSE LE=VAL(A$)
60 IF LE<1 OR LE>3 OR LE<>INT(LE) THEN 40
70 PRINTLE  PRINT@331 "PLEASE WAIT", SCREEN0,1
80 DIM N$(9) LL(20  HU 20)
90 FOR I=0TO9 READ N$(I) NEXTI
100 DATA BU2U8E2R4F2D6G2L4BR10,BR2R4L2U12G2BD10BR10,U2E4R2E2U2H2L4G2BD10R8BR4,BU
2F2R4E2U2H2L2R2E2U2H2L4G2BD10BR12 BU4R8L8U2E6D12BR6
110 DATA BU2F2R4E2U4H2L6U4R8BD12BR4 BU2U6E4R4BG6R4F2D2G2L4BR10,BR2U4E6U2L8BD12BR
12 BU2U2E2H2U2E2F4F2D2G2L2R2F2D2G2L4BR10 R4E4U6H2L4G2D2F2B6BD6BR4
120 FOR I=&H6000 TO &H604F READ A$ POKE I VAL("&H"+A$) S=S+VAL("&H"+A$):NEXTI
130 DATA 3,FC,0,0,7F,3,C0,0,0,F,F0,0,0,3D,FC,0,0,3F,FC,0,0,F,F0,0,7F,3,C0,0,3,FC
0,0
140 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,2,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
150 DATA A9,69,A9,69,A9,69,55,55,55,55,A9,69,A9,69,A9,69
160 IF S<>4276 THEN CLS PRINT INCORRECT DATA IN LINES 100-120  STOP
170 S=0 FOR I=&H7000 TO &H7004 READA$:POKE I,VAL("&H"+A$) S=S+VAL("&H"+A$) NEXT
I
180 DATA 7E,70,77,12,12,12,0D,80,12,80,1,50,81,30,2D,3,7E,70,10,81,10,2E,3,7E,70
,2E,39
190 DATA FC,6F,FE,10,A2,10,FC,26,1,39,C3,0,20,FD,6F,FC,7E,70,41,FC,6F,FE,10,83,7
7C,26,1,39
200 DATA C3,FF,E0,FD,6F,FC,12,12,12,BE,6F,FE,10,8E,60,20,00,70,5C,BE,6F,FC,10,8E
,60,A0,8D,70,5C
210 DATA BE,6F,FC,8E,6F,FE,CD,7F,6F,F9,5F,A6,A0,A7,85,5C,C1,4,26,F7,30,88,20,7C,
6F,F9,86,6F,F9
220 DATA 81,8,26,E9,39,8E,7,9L,8F,6F,FE,10,8E,60,D,8D,70,5C,39
230 IF S<>15340 THEN CLS PRINT INCORRECT DATA IN LINES 190-180" STOP
240 S=0 FOR I=&H7300 TO &H7366 READA$ POKE I,VAL("&H"+A$):S=S+VAL("&H"+A$) NEXTI
250 DATA 7F,6F,EF,EC,A1,ED,84,30,88,20,7C,6F,EF,86,6F,EF,81,8,26,EF,39,8E,6F,F0
260 DATA 10,8E,60,20,8D,73,0,D6,6F,F1,84,1F,01,1A,26,4,7E,73,3D,12,86,6F,F0,30
270 DATA 1,8E,6F,F0,10,8E,60,60,8D,73,0,39,0,86,1,87,73,3C,8E,6F,F0,30,2,8C,6F,F
E,26,4,7F,73,3C
280 DATA 39,30,88,E0,8C,6F,FE,26,4,7F,73,3C,30,80,60,8C,6F,FE,26,3,7F,73,3C,39
290 IF S<>11636 THEN CLS PRINT INCORRECT DATA IN LINES 220-250" STOP
300 PMODE 1,1  PCLS
310 GET (0,0)-(10,14),CL,G
320 DRAW "C2,BM0,3 R4U2D4R2U4R2U2D0R2D2U12R2U2D16U2R2U12D2R2D0U2R2U4R2D4R2D2U8R2
U2D12U2R2U8D2R2D4U2R2"
330 GET (0,0)-(20,16) HO,G PCLS
340 DRAW "BM0,0 C4 R255D20L255U20;BM0,191;R255
350 PUT(4,2)-(34,16),HO PSET
360 PUT(222,2)-(252,18)-HO,PSET
370 DRAW "BM76,16,C3;BU2F2F4E2U2H2L4H2U2E2R4F2D10BR4BU2U8E2R4F2D8G2L4BR10BU2U8
E2R4F2D8G2L4BR10U12R6F2D2G2L4R2D2F4BR4U12R8BD6BL2L6D6R8BR4BU4R8BU4L8"
380 EXEC&H7000 TIMER=0 GOSUB 460 SCREEN1,1
390 POKE &H6FF0,RND(9)+7 POKE&H6FF1,0
400 IF TIMER 8000- LE*1000 THEN 540
410 C=C+1 IF C=(4-LE) THEN EXEC&H7315 G=G+1 C=0
420 EXEC &H7006 IF LE<>1 THEN EXEC&H7006
430 IF G<>27 THEN 410 ELSE G=0
440 IF PEEK(&H733C)=1 THEN SOUND200,2 SOUND100,2 GOTO 390
450 PLAY "V31;L110;O3;CDEFGFEDCC" SC=SC+1 IF SC=10 THEN 480 ELSE GOSUB 460 GOTO
390
460 PUT(156,2)-(176,16),CL,PSET
470 DRAW "BM156,16 C4 "+N$(SC) RETURN
480 SCREEN0,0 FORI=0TO8 CLSI SOUNDI*15+1,2 NEXTI:CLS
490 PRINT@235,"WELL DONE!";
500 PRINT PRINT"        CHRISTMAS IS SAVED!"
510 PRINT PRINT "YOU SCORED" INT(4000/TIMER*1000*LE)
520 PRINT PRINT"WOULD YOU LIKE ANOTHER GO  ?"
530 Q$=INKEY$ IF Q$="" THEN530 ELSE IF Q$="Y" THEN RUN ELSE STOP
540 CLS PRINT"YOU HAVE RAN OUT OF TIME ...":PRINT"YOU PICKED UP",SC;"PRESENTS.":
GOTO 520
```

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The Popular

After boosting our own egos on page 20, this is where *Popular Computing Weekly* hands over to you. We're asking you to vote in our first ever readers' poll — a compilation of the best and worst of 1984

1 Game of the year (overall)

This is the one What do you think is the most stupendous, amazing, unsurpassable, inventive game released this year? What program were you still playing at three o'clock in the morning?

2 Arcade game of the year

Thumbs aching from megazapping on the 14th attack wave? Palms still moist with tension? Which program is responsible? We want to know the most compulsive, original, action packed, best written, graphically astounding, tension inducing, arcade game of the lot.

3 Adventure of the year

What adventure had you refusing to sleep or eat? Which produced most effectively that exquisite blend of unbearable frustration with bewitching addictiveness that is the mark of a really excellent adventure?

4 Business program of the year

Most adverts tell you a micro is suitable for business uses What program released this year did you find most genuinely useful in your home or small business?

5 Utility program of the year

A wide section — perhaps a language package for your micro you've found useful. Or a program that lets you design your own games. You decide

6 Peripheral of the year

A wide choice here — printers, plotters, light pens, remote control joysticks, midi interfaces. What peripheral really added something to your computer this year?

7 Best software house

Which software company do you feel brings out consistently good games at a fair price? Customer service is important, too — which company is most helpful/prompt in answering queries?

8 Most exciting new computer

Not necessarily your own machine but perhaps the one you've been eyeing most lasciviously in the shops. If you had the money, which computer would you buy?

Readers' Poll

9 Best programmer

Whose programs have that certain 'something', be it graphics/plot/programming expertise, that makes you look for the name of the author on the inlay rather than the pretty picture on the front?

10 Most promising new company

A lot of new companies sprang to the forefront with innovative new games in 1984. Which one do you think most deserves to go on to greater things in 1985?

11 Worst computer

Is it the one that's been gathering all the dust since last Christmas? Or the one they'd have to pay you to take from the shop?

12 Computer program you most regret buying

You saw the adverts, you saw the enormous box with pull-out poster and enormous booklet, you opened the box and loaded it up. Then you threw it straight out the window in disgust. What program most made you wish that you'd waited until you'd read a review in *Popular* before you bought it?

13 Most overrated software house

Big names. Enormous advertising budgets. Fleet Street coverage. What software house gets the most coverage, but produces the most rubbish in your opinion? What software house produces software that everyone else thinks is great, but you always find deadly dull — your chance to speak out by voting in this section.

14 Worst TV/cinema spin-off

Computer game spin-offs from TV, the movies, the Olympics, books, etc, were one of 1984's 'in' things. Which program failed most dismally to live up to the original?

15 Silliest advertisement

Instead of making you want to rush out and buy the product, this advert left you unsure whether to laugh or cry. Which ad made you feel certain the product must be a dodo.

All you have to do is fill in the spaces beside each category with your choices. If you don't feel qualified to answer any particular section, it doesn't matter, just leave that one blank. Then fill out the form at the bottom, and send it all off to *Popular Computing Weekly*, Readers Poll, 12-13 Little Newport Street, London WC2H 7PP.

Entries should reach us no later than Thursday January 10. The results will appear in *Popular Computing Weekly*, January 24.

Remember — all the programs you vote for must have been released later than January 1st 1984.

Name ....

Age ....

Male/Female (delete as appropriate)

Micro/Micros owned (if any) ....

BACKPACKERS
GUIDE TO THE UNIVERSE PART 1

Not just a game...
...more a way of life

48K Spectrum
£7·50

Software by fantasy

Lows and highs

*Felling tired and emotional on Boxing Day — **Steve Hollywood** and **Ian Williams** may have an explanation*

This program will produce a high resolution graph of your biorhythms on a television or monitor and will, if desired, output the result to a printer using the screen dump routine provided by Psion in their *Easel* program. The program has been written for a 'JM' QL but it has been run on the earlier version successfully

Biorhythms or rhythms of life were first discovered by an Austrian psychologist, Herman Svoboda and a German doctor, Wilhelm Fleiss, working independently around the turn of the century. They both noticed that patients suffering from emotional and physical problems suffered more acutely in regular bouts, or cycles. They identified these periods as being 23 days for physical and 28 days for emotional problems. It appeared that these states, which are common to all human beings, varied by the periods shown in a sine wave pattern, in there were distinct peaks when those conditions were at their best and corresponding troughs when the emotional and physical states were in poor shape. The third area, that of intellectual performance, was discovered by a Dr Telscher, working on the scores of some of his students. He found that their performance tended to vary in 33 day cycles, much the same way as for the other two states

Although considerable work has been carried out with regard to accident prevention using this knowledge, it is still not clear how much reliance can be placed on them. Nevertheless it's a nice party trick to show your friends when they're feeling low (or high!)

Reading the graphs is quite easy. There's a plus (+) and a minus side to the y axis and, in the centre of the X axis, the current date is shown, which you must input by altering the variables in Line 85 as shown in the listing. As each graph is drawn the letters I (Intellectual), E (Emotional) and P (Physical) are appended. From there, it's simply a matter of looking to see which graph peaks where. If they all peak together then it's a good day to tackle something difficult, but if the converse is true then perhaps you should spend a few days in bed!

Program notes

Lines 15-20 Load the machine code screen dump by Psion from their *Easel* cartridge. Since the program will do this automatically as soon as you *Run* it, delete these lines if you don't want a printed copy. If you do want a printed copy then having typed in the program and saved it remove your program cartridge, then place the *Easel* cartridge in mdv1. Place your program cartridge in mdv2, type *Lrun mdv2 – biorhythms* or whatever name you used.

Line 330 This calls the procedure *messy* which in turn calls *trog*. Between them, these two do all the calculations and checking for leap year, etc.

Lines 465 This calls the procedure *doit* which draws the graphs.

Lines 105 - 140 provide suitable invocations of doom, reading the intersection points of the three graphs.

If you do not have a printer, and this program is configured to work with all printers of the Epson range, then amend Line 748 to *pause 1000* and delete Lines 15 to 20

One other thing: my printer still reads in "$" as "£" so all "£" signs should be altered accordingly (/ is the channel prefix for the QL)

```
1 REMark *************************************************
2 REMark *
3 REMark *   BIORHYTHMS  by  Steve Hollywood and Ian Williams
4 REMark *
5 REMark *************************************************
10 REMark     Load print dump routine from mdv1
15 start=RESPR(300)
20 LBYTES mdv1_gprint_prt,start
25 REMark ********************
30 REMark  Arrays :
35 REMark           N            Contains the number of days in each month
40 REMark           V            Is used to store the number of times the
45 REMark                        graphs pass through the axis.
50 REMark           D$           Contains the days of the week
55 REMark           F1$          Mild warnings of doom,etc.
60 REMark           F2$          More horrible invocations
65 REMark           b            Checks syntax of data entry
70 REMark *****************
75 DIM N(13),V(20),D$(7,9),F1$(10,40),F2$(10,40),b(10)
80 amp=80
85 Y2=1984:M2=11:D2=18:D3=0:REMark ....M2= current month,D2=current date,Y2=curr
ent year
90 RESTORE 105
95 FOR A=1 TO 7:READ D$(A):NEXT A
100 FOR A=1 TO 12:READ N(A):NEXT A
105 DATA "MONDAY","TUESDAY","WEDNESDAY","THURSDAY","FRIDAY","SATURDAY","SUNDAY"
110 F1$(4)="   TAKE IT EASY ON "
115 F1$(3)="   BE WARE ON "
120 F1$(2)="   WATCH YOUR DIET ON "
125 F1$(1)="   BE-WARE OF BLACK CATS AND THE LIKE ON "
130 F2$(1)='   NOT ATTEMPT ANY HARD WORK ON "
135 F2$(2)="   TAKE A FEW ASPRIN AND REST ALL '
140 F3$='   SAY IN BED ALL DAY ON "
145 WINDOW£1,512,256,0,0
150 PAPER 0
155 MODE 512
160 CLS
```

```
165 CSIZE 1,0
170 PRINT TO 15;"BIORHYTHMS":PRINT TO 15;"=========="
175 DATA 31,28,31,30,31,30,31,31,30,31,30,31,31
180 PRINT
185 PRINT "Type in your name and press the ENTER key.'
190 PRINT:INPUT N$
195 IF N$(1)=" " THEN N$=N$(2 TO):GO TO 195
200 IF N$(LEN(N$))=" " THEN N$=N$(1 TO LEN(N$)-1)
205 IF N$="" THEN GO TO 160
210 CLS
215 PRINT TO 15;'BIORHYTHMS"\TO 15;'=========="
220 PRINT\"Hi there ";N$
225 PRINT\"Type in your birthdate in this format:"
230 PRINT\"              day.month.year"
235 PRINT\"example:-"
240 PRINT\"If you were born on the 23rd of October"
245 PRINT\"1960 then enter the data like this:"
250 PRINT\TO 15;"23.10.60"
255 PRINT\"do not forget the full stops''"
260 PRINT\"Now enter your data,...."
265 INPUT e$
270 IF e$(1)="." THEN e$=e$(1 TO LEN(e$)-1)
275 L=0
280 FOR A=1 TO LEN(e$)
285     IF e$(A)="."THEN L=L+1:b(L)=A
290 NEXT A
295 IF L<>2 THEN GO TO 215
300 D1=e$(1 TO b(1)-1)
305 m1=e$(b(1)+1 TO b(2)-1)
310 IF D1=0 OR m1=0 THEN GO TO 215
315 y1=e$(b(2)+1 TO)
320 IF y1<84 THEN y1=y1+1900
325 IF y1<1880 THEN GO TO 215
330 messy
335 PRINT
340 D=L-10
345 OPEN£6,ser1:BAUD 9600
350 1s=33+LEN(N$ & D2 & M2 & Y2)
355 PRINT£6,CHR$(27);"E";\;TO (40-1s/2):FILL$("*",1s)
360 PRINT£6,TO (40-1s/2);"* Biorhythms for ";N$;" printed on ";D2;'/';M2;"/";Y2;" *"
365 PRINT£6,TO(40-1s/2);FILL$("*",1s)
370 PRINT£6,CHR$(27);"@'
375 WINDOW £1,512,256,0,0:CLS
380 SCALE£1,192,0,0
385 LINE 19,0 TO 19,191
390 LINE 19,95 TO 259,95
395 CURSOR 30,49;CSIZE 3,1:FRINT "+"
400 CURSOR 30,180:PRINT "-"
405 CSIZE 0,0:CURSOR 142,98,0,0:PRINT D2
410 FOR x= 19 TO 256 STEP 12
415   LINE x,93 TO x,97
420 NEXT y
425 LINE 138,93 TO 138,97
430 LINE 150,93 TO 150,97
435 LINE 139,91 TO 139,99
440 LINE 151,91 TO 151,99
445 LINE 140,93 TO 140,97
450 LINE 152,93 TO 152,97
455 cy=23 460 c=1 465 doit 470 cy=28
475 c=2 480 doi 485 cy=33 490 c=3495 doit
500 OPEN£6,ser1:PRINT£6
505 PRINT£6:PRINT£6;TO 10;"P = Physical"
510 PRINT£6:PRINT£6;TO 10;"E = Emotional
515 PRINT£6:PRINT£6;TO 10;"I = Intellectual"
520 PRINT£6:PRINT£6;TO 20;"Analysis"
525 PRINT£6;TO 20;"========"
530 PRINT£6:PRINT£6;"According to your biorhythms you should:-"
535 f1=1:f2=1:f3=1:f4=D3
540 N$=" "
545 FOR A=10 TO 19
550 IF V(A)=1 THEN PRINT£6;\F1$(f1);N$;D$(f4):f1=f1+1
555 IF V(A)=2 THEN PRINT£6;\F2$(f2);N$;D$(f4):f2=f2+1
560 IF V(A)=3 THEN PRINT£6;\"STAY IN BED ON ';N$;D$(f4)
565 f4=f4+1:IF f4=7 THEN f4=0:N$="NEXT "
570 NEXT A
575 GO TO 25
580 DEFine PROCedure mesey
585     L=365*(Y2-y1)
590     IF M2>1 THEN FOR x=1 TO M2-1:L=L+N(x):NEXT x
595     IF m1>1 THEN FOR x=1 TO m1-1:L=L-N(x):NEXT x 600 L=L+D2-D1
605 Y=INT(y1/4)*4
610 Y=Y+4:IF Y>=Y2 THEN GO TO 625
615   A=Y:trog:IF A=1 THEN L=L+1
620   GO TO 610
625   IF Y=Y2 THEN GO TO 645
630 A=y1:trog:IF A=1 AND m1<3 THEN L=L+1
635   A=Y2:trog:IF A=1 AND M2>2 THEN L=L+1 640   RETurn
645     A=y1:trog:IF A=1 AND m1<3 AND M2>2 THEN L=L+1 650   RETurn
655 END DEFine meesy
660 DEFine PROCedure trog
665   IF INT(A/4)=A/4 THEN IF INT(A/100)<>A/100 OR INT(A/400)=A/400 THEN A=1:RETurn 670   A=0:RETurn675 END DEFine trog
680 DEFine PROCedure doit
685   POINT 19,(amp*SIN(2*PI/cy*D)+95)
690   FOR x=19 TO 259 STEP 2
695     Y=(amp*SIN(2*PI/cy*(D+(x-19)/12))+95)700 LINE TO x,Y
705         IF Y<96 AND Y>94 THEN V((x-19)/12)=V((x-19)/12)+1 710   NEXT x
715  ON c GO TO 720,730,740
720 CSIZE 0,1:CURSOR 261,Y,0,0:PRINT "P"
725  RETurn 730 CURSOR 268,Y,0,0:PRINT "E"  735 RETurn
740 CURSOR 271,Y,0,0:PRINT "I"
745 CLOSE£6:CALL start,0,0,0,0,0,0,0,0,0
750   RETurn
755 END DEFine doit
```



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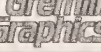
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SPECTRUM 48K



Silent sprite

The spirit of Christmas Eve displayed on the Commodore 64 by ***Mark Gornal***

The program shows Christmas Eve turning into Christmas Day and all the happenings that go along with this, eg the opening of presents. There are five different sprites used in the program together with noises from the wall clock and chimes on the hour. There is also a small machine code routine used to add the finishing touch at the end of the program. The machine code uses the Kernal routine GETIN ($FFE4), to check if a key is pressed, whilst doing this it rapidly changes the colour of the border, producing a pleasant effect. If a key is pressed the border will stop changing colour and the program will run again.

Program Notes

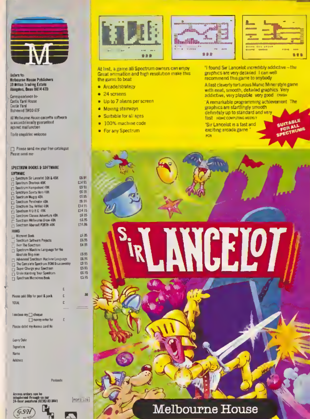
4	Set screen colour
6	Initialise variables
8	Clear SID chip
12-22	Define sprites
24	Expand sprite 0 both ways
26	Set sprite colours
30-48	Draw screen
50-58	Position sprites
60-62	Complete Christmas tree
64-74	Print messages, make clock tick
76	Draw clock 2
78-90	Play clock tune
92-100	Flash tree and chime clock
102	Open presents
104-108	Print messages
110	Wait
112	Define machine code
114	Run machine code
116	Start again
118-138	Create clock noise
140-170	Sprite data
172-176	Musical notes
178-184	Sprite data
186-188	Machine code

abbreviations

[CLR]—Shift CLR/HOME

[HOME]—CLR/HOME

```
2 REM *** MERRY CHRISTMAS-MARK G-1984 ***
4 POKE53280,0 POKE53281,6:POKE646,0
6 S=54272:V=53248
8 FORI=0TO24 POKES+I,0:NEXTI
10 REM *** DEFINE SPRITES ***
12 POKE2040,192
14 FORI=12288TO12350:READA:POKEI,A:NEXTI
16 POKE2041,193:POKE2042,193:POKE2043,193
18 FORI=12352TO12414:READB:POKEI,B:NEXTI
20 POKE2044,194
22 FORI=12416TO12478:READC:POKEI,C:NEXTI
24 POKEV+29,1:POKEV+23,1
26 POKEV+39,5 POKEV+40,0:POKEV+41,7:POKEV+42,1:POKEV+43,1
28 REM *** SET SCREEN ***
30 PRINT"[CLR]"
32 FORI=0TO439:POKE1584+I,102:POKE55856+I,14:NEXTI
34 FORI=0TO4:POKE1544-40*I,116:POKE1571-40*I,106
36 POKE55816-40*I,0:POKE55843-40*I,0:NEXTI
38 POKE1364,78:POKE55636,0:POKE1374,77:POKE55643,0
40 FORI=0TO5 POKE1365+I,119:POKE55637+I,0 NEXTI
42 FORJ=0TO2 FORI=0TO3
44 POKE1566+I-40*J,224:POKE55838+I-40*J,0:NEXTI:NEXTJ
46 POKE1446,233:POKE55718,0:POKE1447,224:POKE55719,0
48 POKE1448,224:POKE55720,0:POKE1449,223:POKE55721,0
50 POKEV+21,31 POKEV,68:POKEV+1,180
52 POKEV+2,105:POKEV+3,155
54 POKEV+4,90:POKEV+5,175
56 POKEV+6,115:POKEV+7,165
58 POKEV+8,204:POKEV+9,70
60 POKE1632,66:POKE55906,0
62 POKE1671,95:POKE55943,0:POKE1672,224:POKE55944,0:POKE1673,
105:POKE55945,0
64 GOSUB120
66 PRINT"[HOME]ONE MINUTE TO MIDNIGHT, CHRISTMAS EVE."
68 GOSUB120
70 PRINT"[HOME]THE SECONDS TICK AWAY... ..........."
72 GOSUB120
74 POKE646,1:PRINT"[HOME]************ CHRISTMAS DAY ************"
76 FORI=12416TO12478:READA:POKEI,A NEXTI
78 POKES+5,88:POKES+6,252
80 READ HF,LF,DR
82 IFHF 0THEN92
84 POKES+1,HF POKES,LF:POKES+4,33
86 FORI 0TODR NEXTI
88 POKES+4,32:FORI=0TO150:NEXTI
90 GOTO80
92 POKES+6,127:POKES+5,125
94 FORI=1TO12:POKES+1,4:POKES,48
96 POKES+4,33
98 FORJ=0TO50:POKEV+21,PEEK(V+21)AND254 POKEV+21,PEEK(V+21)
OR1:NEXTJ 100 POKES+4,32:NEXTI
102 FORI=12352TO12414:READA:FORJ=1TO40:NEXTJ:POKEI,A NEXTI
104 PRINT"[HOME]MERRY CHRISTMAS FROM ":REM * 19 SPACES *
106 POKE1046,13:POKE1047,1:POKE1048,18:POKE1049,11
108 POKE55318,0 POKE55319,0:POKE55320,0:POKE55321,0
110 FORI=0TO4000:NEXTI
112 FORI=49152TO49170:READA:POKEI,A:NEXTI
114 SYS49152
116 RUN 118 REM *** TICK TOCK ***120 POKES+24,15 122 FORJ=0TO5
124 POKES+1,7:POKES,233:POKES+4,65 126 POKES+4,64
128 FORI=1TO400:NEXTI 130 POKES+1,6:POKES,71:POKES+4,65
132 POKES+4,64 134 FORI=1TO400:NEXTI 136 NEXTJ
138 RETURN140 REM *** TREE ***
142 DATA0,24,0,0,24,0,0,60,0,0,60,0,0,126,0,0,126,0,0,255,0,0,
255,0,1,255
144 DATA128,1,255,128,3,255,192,3,255,192,7,255,224,7,255,224,
15,255,240
146 DATA15,255,240,31,255,248,31,255,248,63,255,252,63,255,252,
127,255,254
148 REM *** CLOSED PRESENT ***
150 DATA0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,3,255,255,4,
6,3,8,12,5
152 DATA31,255,249,32,48,25,64,96,41,255,255,201,128,192,73,128
,192,74,128
154 DATA192,76,128,192,72,128,192,80,128,192,96,255,255,192
156 REM *** CLOCK 1 ***
158 DATA0,62,0,0,201,128,3,72,96,4,32,16,4,32,16,8,40,8,8,24,
8,16,24
160 DATA4,16,24,4,28,8,28,16,0,4,16,0,4,8,0,8,8,0,8,4,0,16,4,
0,16,3 162 DATA8,96,0,201,128,0,62,0,0,0,0,0,0,0
164 REM *** CLOCK 2 ***
166 DATA0,124,0,1,147,0,6,16,192,8,16,32,8,16,32,16,16,16,16,16
,16,32,16 168 DATA8,32,16,8,56,16,56,32,0,8,32,0,8,16,0,16,16,
0,16,8,0,32,8,0170 DATA32,6,16,192,1,147,0,0,124,0,0,0,0,0,0,0,0
72 REM *** CHIME *** 74 DATA 7 ,233,250,6,71,250,7,12,250,4,
180,500,4,180,250,7,12,250,7,233,250 76 DATA 6 ,71,450,-1,-1,-1
78 REM *** OPEN PRESENT ***80 DATA0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 1,128,2,14,54,109,52,0,2,72,
0,2,83,24,2,172 82 DATA6,32,0,9,80,0,112,140,
84 DATA250,28,144,1,160,255,255,192
86 REM *** MACHINE CODE ***
88 DATA 169,0,141,198,0,162,0,142,32,208,232,32,228,255,201,
0,240,245,96
```



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Open Forum

We are always actively seeking programs for publication — either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation — usually not more than 1000 words — should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates, according to the length and nature of the program and the quality of the accompanying documentation.

Pairs

on Amstrad

Pairs is an old favourite which still holds a mental challenge in today's Zap-Ping computer world. The 52 cards are laid-out randomly, face downwards, and each player takes turns to flip any two over. If their values match, then the player wins them and plays again. The player with most cards at the end of the game is, logically the winner.

You can play another opponent or the Computer. If you choose the latter, then you will have to keep on your toes. Although it turns the first card over randomly, it searches its memory to determine whether or not it has 'seen' a match, at least twice. If it has, then it finds it, and wins the pair. For this reason, it starts very slowly, but is dynamite towards the end of the game. Alter the value of 'H' in line 270 to zero for a real challenge, or to −2 if your memory is a little as[illegible]ent.

The game is played in *Mode 1* which limits the display to four colours.

```
10 CLS:CLEAR:DEFINT A-Y:DIM L(52 [illegible]) C(52) P(52) [illegible] T [illegible] 24 [illegible](52) [illegible]
20 MODE 1 [illegible] INK 1 26 [illegible] 3 16 INK 2 20 [illegible]
30 FOR [illegible] 2 TO 14 STEP 4 FOR I=2 TO 38 STEP 3 [illegible]
40 SYMBOL 255 76 218,83 82 82 [illegible] 76 0 [illegible] A2345[illegible] +CHR$(255)+ [illegible]
50 CLS [illegible] 470 [illegible] GOSUB 500 GOSUB 450 LOCATE [illegible] GOSUB 590
60 WHILE [illegible] 26 AND [illegible] GOSUB 200 WEND [illegible] NOT [illegible]
70 WINDOW #1 1 8 19 25 WINDOW #2 30 40 19 25 WINDOW #3 10 31 [illegible] 25 [illegible]
80 CLS [illegible] GOSUB 190 [illegible] GOSUB 460 [illegible]
85 [illegible] Main play loop from here
90 CLS [illegible] PRINT#0 PRINT#[illegible] PRINT#2 [illegible] FIRST [illegible] GOSUB 160 [illegible]
100 [illegible] SECOND [illegible] GOSUB 160 [illegible]
110 IF [illegible] 26 THEN IF NOT [illegible] OR PL [illegible] THEN 90 ELSE GOSUB 250 GOTO 110
120 CLS #3 PRINT#[illegible] PRINT#3 [illegible] GAME OVER [illegible] GOSUB 650
130 PRINT#3 PRINT#3 [illegible] WANT ANOTHER [illegible] (Y/N)[illegible]
140 [illegible] GOSUB 240 IF [illegible]=2 THEN END ELSE [illegible] CLS#[illegible] PRINT#[illegible]
150 [illegible] GOSUB 240 [illegible] GOTO 80
160 PRINT#3 [illegible] INP [illegible] card [illegible] FOR [illegible]
170 IF [illegible] 53 AND [illegible] 0 THEN IF [illegible] THEN [illegible] GOSUB 350 [illegible]
180 PRINT#3 CHR$(7) CHR$[illegible] CHR$(18) CHR$[illegible] GOTO 16[illegible]
```

Arcade Avenue

Monty tips

Can I offer my thanks to everyone who wrote in to tell me how to get past screen 14 of *Monty Mole* — in particular James Barker of Southwell, David McCann of Glasgow and even Kevin Norbury of Gremlin Graphics itself. As you doubtless know, we printed the answer a little while ago. Michael Aherne of Glasgow has also written in with this tip and goes on to say "although I can get past the barrier on screen 14 there is a bit of coal up on a pipe on the same screen and once I have collected this I can't get down without losing a life. What do I do? Do you have any infinite lives tips for *Mugsy*, *Chuckie Egg* or *Beaky and the Eggsnatchers*? Also how do you blow up the reactor in *Blue Thunder*?

Hopefully someone out there can help us with those problems, Michael — and regarding Monty rescue is close at hand in the shape of Michael Noon also of Glasgow who writes, I assume, about the Spectrum version, "*Poke* 37512,0 gives endless lives and *Poke* 47639, 255 and *Poke* 47640,0 together gets rid of the angel flying up when you lose a life." Many thanks for that last one as I find the death sequence incredibly irritating. Michael also says he has discovered a bug in the first screen of the same program. "Walk to the left jumping over the bucket and into the hut. As long as you don't stop the picket will walk right past you. Then by repeatedly jumping up Monty will get onto the roof of the hut. Then you can jump onto the cloud and eventually make your way to the squirrel. The game will probably then crash but if it doesn't it soon will when you try to leave the screen." Thanks for that bit of fun, Mike. I've noticed myself that rather than destroying the dog once you have the bucket you can wait on the ledge and jump onto the picket making his top half disappear and leaving a pair of legs walking around. Unfortunately, you are then stuck.

Another Monty tipster is Ian Richards of Aberdeen who then goes on to give us some useful tips for the Spectrum *Kokotoni Wilf*. "Enter and Run the following program then start your tape

10 *Clear* 24100 *Load* "" *Code*
20 *Randomise Usr* 65100 *Load* "" *Code*
30 *Poke* 42814,XX *Print Usr* 41200 (where XX is the number of lives)

Now comes my inevitable high scores: 1) Ocean's *Decathlon*, Day 1, 462000 (Round 7) Day 2 502000 (Round 5). 2) The Edge's *Psytraxx* 11,400 (26%). In this game there is a randomly hidden red man that gives an extra life if bumped into. The game is quite addictive but plays like *Atic Atac* with more rooms. I did not think much of the Spectrum version of *Beach Head* as I completed the most difficult level on day 1 and have not touched it since. Finally, can anyone get past level 13 on *Frank N Stein* by PSS?" Well why not get a bit more practice in on Frank with this infinite lives routine that comes all the way from Olav Nygaard of Norway. "Merge the header and change it to this.-

10 *Border* 0: *Ink* 0: *Clear* 24750: *Load* "" *Screen*: *Paper* 0: *Print at* 0,6;: *Load* "" *Code*: *Poke* 28287, (number of lives 0-255) *Randomise Usr* 27890

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to Tony Kendle, Arcade Avenue, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.


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Open Forum

```
190 FOR P=1 T[illegible] P)=0 GOSUB 230 NEXT
200 IF NH THEN PRINT#2 STRING$(2 1) COMPUTER
210 LOCATE 1 12 PRINT STRING$(40 210) T$=CHR$(149)
220 FOR 1=19 TO 25 LOCATE # 1 PRINT T$ LOCATE 12 " PRINT
T$ NEXT RETURN
230 CLS#P PRINT#P PRINT#P PLAYER [illegible]
235 '** Look for a character in T$ Return
its position in L **
240 A$=UPPER$(INKEY$) IF A$="" THEN 240 ELSE L=INSTR(T$ A$)
IF [illegible] THEN RETURN ELSE 240
250 CLS#3 PRINT#3 PRINT#3 "I CHOOSE..
260 PRINT RND*52+0.5)
270 IF P<1 OR P(P)=0 THEN 260 ELSE P1=P PLR=0 GOSUB 350
V1=VR Y(P)= P=1 P=P
280 C=C-INT(C 13)*.3 FOR I=C TO C+39 STEP 13 IF I1=P1 OR
X(I1 /1 OR P C I1 =0 THEN NEXT ELSE P=C I1 GOTO 300
290 P=INT(RND*52+0.5) IF P<1 OR P(P)=0 THEN 290
300 D=800-4200*GAME P2=P P(S =0 GOSUB 350 V2=VR IF GAME THEN
PRINT P1 RND*P2 310 A$=UPPER$(INKEY$) 320 IF V1<>V2 THEN
P=P1 GOSUB 410 P=P2 D=20 GOSUB 110 PEN 1 PL=3-PL RETURN
330 NU=NU+1 GOSUB 600 D=1000 P=P1 T$=" GOSUB 430
D=20 GOSUB 390 GOTO 450 350 GOSUB 400 P=Y(P) SS=INT((P-1)/13
+1 VR=P-(SS-1)*13 V=V-2 T$=M10$K$S$ VR 1 360 PAPER 1 PEN
3+3*(SS=1 OR SS=4 [illegible] 440 V=V+2 H=H+1 GOSUB 440 H=H 1
370 T$=CHR$(225+SS) GOSUB 440 H=H+1 V=V 2 GOSUB 440 PAPER
0 PEN 1 RETURN 380 IF GAME THEN J=PL 1=NC(J)+2 ORIGIN 516
(J-1)+0 1-1 DRAWR 24 6 2 DRAWR 24 1 ? LOCATE #J 5 6 PRINT#J
I, NC(J)=1 RETURN ELSE RETURN 390 FOR KK = 1 TO D NEXT
RETURN 400 T$=STRING$(2 143) C$=T$ GOTO 430 410 GOSUB 390 P
P =-1 420 PEN 2 C$=STRING$(3 127) T$=STR$ P T$=LEFT$(RIGHT
$ T$ LEN(T$)-1 )+C$ 2) 430 H= [illegible] GOSUB 440
T$=C$ V=V+1 GOSUB 440 V=V+1 440 LOCATE H V PRINT T$ RETURN
450 GOSUB 390 T$=" C$=T$ GOTO 430
460 PRINT P(P*5 ) IF P>52 OR P<1 OR P(P =-1 THEN 460 ELSE
P(P =-1 GOSUB 420 K=K+1 X(K)=P Y(P)=V IF K<52 THEN 460 ELSE
PEN , RETURN 470 '** Computer's intelligence is in H
, Lower = Thicker ** 470 CLS H=50 H=35 E=1 [illegible] FOR P=1
TO 52 480 ORIGIN L(P 0 -1)*16-1 (26-L(P 1))*16 DRAWR N 0
E DRAWR 0 -M E DRAWR -N 0 E 490 DRAWR 0 M E P(P)=NU X(P)=H
NEXT C$=STRING$ 2 222 RETURN
500 LOCATE 1 10 PEN 3 PRINT"PAIRS : PEN 1
510 PRINT "is a test of observation & memory."
520 PRINT "You will be invited to 'turn over' two"
530 PRINT "playing cards If their VALUES match, you"
540 PRINT "win them. You may play against another"
550 PRINT "person (Press " PEN 3 PRINT"P"; PEN 1
560 PRINT "to start) or the Computer"/
570 PRINT "(Press "; PEN 3 PRINT"C ; PEN 1
580 PRINT "which learns to play ... slowly" G=0 RETURN
590 PEN 2 PRINT#0 "(Press "P" or "C" now)" PEN 1 RETURN
600 IF NOT GAME THEN RETURN ELSE RESTORE 630 V=15
610 FOR I=1 TO 4 READ P7 0 P(1) P(2) P(3) FOR J=1
TO 3 SOUND t,P7 V 7
620 SOUND 2 0 1 7 SOUND 4 P(1) 1 7-0+0 XOR 11 BORDER 0 NEXT
J I RETURN
630 DATA 95 119 319 239,190 119 134 190 239 319,0 119
284,239
640 DATA 142 119 190,239 159 319 340 P=P2
650 RESTORE 740 ENV 1 1 15 1 1 0 15 5 -3 1 ENV 2 1 15 1
660 FOR I=1 TO 24 READ S(I) NEXT FOR I=1 TO 16 STEP 3 READ
A T(I+0)=A T(I+1)=A
670 T(I+2)=A NEXT FOR I = 19 TO 22 READ A T(I)=A NEXT
680 FOR I=1 TO 22 STEP 3 READ A FOR J =0 TO 2 U(I+J)=A
NEXT J,I
690 Z1=1 Z2=0 Z3=0 GOSUB 720 Z2=1 GOSUB 720
700 Z3=1 GOSUB 720 Z3=Z3/2 GOSUB 720 Z1=Z1/2
710 GOSUB 720 FOR I=23 TO 24 T(I)=0 U(I)=0 NEXT Z2=Z2/2
GOSUB 720 RETURN
720 FOR I=1 TO 24 SOUND 1 S(I)*Z3 30 7 SOUND 2 T(I)*Z2 30 0 1
730 SOUND 4 U(I)*Z1 30 0 2 BORDER RND*27 NEXT BORDER 0 RETURN
740 DATA 142 142 142 107 90 71 80 80 80 80 90 95,107 120 127
142,127 107 120
750 DATA 95 80 60 284 253 239 179 190 180 179 213 239,190
160,190,284,426
760 DATA 319 470 426 505 470 319
```

Pairs
by P Hewit

The Music Box



Square wave

Paul Allington of Lowestoft (no relation to Duke Allington, I suppose) has written asking if there are any composer packages around for use on his Spectrum and Fuller Master Unit. Unfortunately, I know nothing about the Fuller unit — I'm not even sure if the company still exists. If anybody has information on available software, could they drop me a line and I'll pass the message on to Paul. Otherwise, you could try Fuller Micro Systems at Sweeting Street, Liverpool 2. If anyone's there, I'm sure they'll help.

Inevitably, there are plenty of other music add-ons (hardware and software) for the Spectrum, and since I've so far ignored this humble machine, I'll try and redress the balance.

At one end of the scale, the Spectrum can be used to control synthesisers through a MIDI interface. Siel can provide you with a complete outfit —synth (if you haven't got one), MIDI interface and a single-track polyphonic, real-time sequencer for about £600 (that's including £600 for the synth.) Siel also produce a Spectrum based expander editor for use with their own expander units only (these are basically extra synthesisers with no keyboard connected up to your system via MIDI). The address is AHED Depot, Reigate Road, Hookwood, Surrey RH6 0AY.

At the other end of the scale is Sinclair's own Music Master package which sells for £9.95 and uses the Spectrum's internal sound (what sound? I hear you cry), turning the computer into a very simple organ.

In between these two are the hardware add-ons incorporating PSGs: Dk'Tronics' Three Channel Sound Synthesizer, Trichord from Newtech Developments; and Ricoll Electronics' Sound Generator — to name three which have been brought to my attention. All of these use the MSX standard AY-8910 PSG or a near equivalent, allowing three channel sound (square wave only), programmable noise and programmable attention for volume control or producing envelopes.

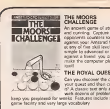
Inevitably, the quality of the software provided is what counts here. The Trichord comes with what seems to be a versatile composer package and includes a number of preprogrammed sounds on firmware. It sells for £26.95 including an internal amplifier. The Dk Tronics device sells at £39.95 and includes the Music Designer program, which is a joystick controlled composer/sequencer. Ricoll's add-on is the most expensive at £45.95 and seems to include only the most basic software. However, the device does include an internal amplifier and a programmable filter — this last being absolutely essential for serious synthesis.

Addresses: Dk'Tronics, Saffron Walden, Essex CB11 3AQ (tel. 0799 26350), Newtech Developments, 1 Courtland Road, Newton Abbott, Devon TQ12 2JA (tel. 0626 62836), Ricoll Electronics Ltd., 48 Southport Road, Ormskirk, Lancashire L39 1QR. (Ricoll also produce a digital sound sampler for the Spectrum — of which more next week)

Gary Herman

The Music Box is a new weekly column with news, reviews and readers comments on all aspects of micros and music.

Any readers with experience of computer music making or companies with new product news are invited to write to, drop a line explaining what they're doing to Gary Herman, The Music Box, 12-13 Little Newport Street, London WC2R 3LD



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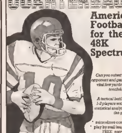
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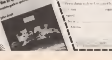


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Open Forum

Carols

on Spectrum

Christmas time, and here is a program to help you combat annoying carol-singers. Run it, and your Spectrum will play enough old favourites to deter all but the most determined wassailers

Program Notes

1-8	Sets up colours, and pauses
9-40	The Read section for the notes
50-55	First tune Data
56-108	Second tune data
115-140	Third tune
200-300	Fourth tune
300-370	Fifth tune
500-600	Sixth tune
9997	Repeat last tune
998	Save routine
9999	Reset colour to original

```
   1 RESTORE 50
   4 BORDER 0: PAPER 0: INK 6: C
LS
   6 CLS : PRINT AT 10,(31-22)/2
; FLASH 1; INK 2; PAPER 7; BRIGH
T 1;"PRESS ANY KEY TO BEGIN.": P
AUSE 0: CLS
   8 PRINT ''Good king wenceslas
"
   9 FOR d=1 TO 2
  10 LET a=.4
  20 READ b,c: IF b=99 THEN REST
ORE 50: PAUSE 50: NEXT d: GO TO
56
  30 BEEP b,c
  40 GO TO 20
  50 DATA a,9,a,9,a,9,a,11,a,9,a
,9,2*a,4,a,6,a,4,a,6,a,8,2*a,9,2
*a,9
  51 DATA a,9,a,9,a,9,a,11,a,9,a
,9,2*a,4,a,6,a,4,a,6,a,8,2*a,9,2
*a,9
  52 DATA a,16,a,14,a,13,a,11,a,
13,a,11,2*a,9
  53 DATA a,6,a,4,a,6,a,8,2*a,9,
2*a,9
  54 DATA a,4,a,4,a,6,a,8,a,9,a,
9,2*a,11
  55 DATA a,16,a,14,a,13,a,11,2*
a,9,2*a,14,4*a,9,99,99
  56 PAUSE 50: PRINT '"O come al
l ye faithful"
  57 RESTORE 65: FOR d=1 TO 2
  58 LET a=.4
  59 READ b,c: IF b=99 THEN REST
ORE 65: PAUSE 60: NEXT d: GO TO
90
  60 BEEP b,c
  61 GO TO 59
  65 DATA a,4,a*2,4,a,-1,a,4,2*a
,5,2*a,-1,a,8,a,6,a,6,a,9,2*a,8,
a,8
  66 DATA a,4,2*a,4,a,3,a,1,a,3,
a,4,a,5,a,8,2*a,3,a*1.5,1,.2,-1
a,4,a,5,a,8,2*a,3,a*1.5,1,.2,-1,
a*3,-1
  67 DATA 2*a,11,a,9,a,8,2*a,9,2
*a,8,a,6,a,8,a,4,a,6,1.4*a,3,a/2
,1,a,-1
  68 DATA a,4,a,4,a,3,a,4,a,8,2*
a,4,1*a,-1
  69 DATA a,8,a,6,a,8,a,6,a,9,2*
a,8,a,8
  70 DATA a,8,a,9,a,8,a,6,a,4,2*
a,3,a,4,a,9,2*a,8,2*a,8,a/2,4,2,
4
  71 DATA 99,99
  90 PAUSE 60: PRINT '"The first
 nowell"
  91 RESTORE 100: FOR d=1 TO 2
  92 LET a=.4
  93 READ b,c: IF b=99 THEN REST
ORE 100: PAUSE 60: NEXT d: GO TO
116
  94 BEEP b,c
  95 GO TO 93
 100 DATA a/2,6,a/2,4,a*1.5,2,a/
2,4,a/2,6,a/2,7,2*a,9,a/2,11,a/2
,13,a,14,a,13,a,11,2*a,9
 101 DATA a/2,11,a/2,13,a,14,a,1
3,a,11,a,9,a,11,a,13,a,14,a,9,a,
7,2*a,6
 102 DATA a/2,6,a/2,4,a*1.5,2,a/
2,4,a/2,6,a/2,7,2*a,9,a/2,11,a/2
,13,a,14,a,13,a,11,2*a,9
 103 DATA a/2,11,a/2,13,a,14,a,1
```

Book Ends

Book *The Amstrad Program Book* **Price** £5.95 **Micro** Amstrad **Supplier** Phoenix Publishing Associates Ltd, 14 Vernon Road, Bushey, Herts WD2 2JL

While there is no longer severe program starvation for the Amstrad, choice is still relatively low and prices are high, so a book of listings could prove tempting to the new owner I would not, however, recommend this one

It succeeds in committing most of the sins that make such volumes a waste of money All the old favourites are here from the Basic *Bomber* to the adventure which lacks just that vital quality In addition several programs are less than two pages in length, though this does at least mean not too much time is wasted typing them in!

Add to this the brief introductions and amateurish cartoons which try to give this tired old selection a semblance of life and you have what looks like a rush job which totally fails to exploit an excellent machine.

John Minson

Book *Basic Programming on the Amstrad* **Price** £7.95 **Micro** Amstrad **Supplier** Micro Press, Castle House, 27 London Road, Tunbridge Wells, Kent

As the Amstrad is a likely first micro there must be a need for books like this which provide an introduction for the computer virgin.

Wynford James has taken a positive hands on approach, and having reassured that no keyboard input can damage the machine, urges the reader to experiment, which is obviously the best way to learn.

This approach leads to most areas being introduced via practical examples, and while it leads to certain topics being discussed in an unexpected order (eg string variables before numeric ones) it works because it is fun. There is also a good chapter on tidy, structured programming

While the book is obviously limited in depth — its treatment of sound is particularly brief — it should provide a firm foundation for the novice

John Minson

Book *The Commodore Disk and Printer Handbook* **Price** £7.95 **Micro** Commodore **Supplier** Phoenix Publishing Associates Limited, 14 Vernon Road Bushey Herts WD2 2JL

Though the addition of disk drives and printers vastly expands the capabilities of any micro, it also creates a whole new language which must be learnt before they can be mastered to their best advantage.

Concentrating on the Commodore 1541 disk drive and 1526 printer, plus a final chapter on the Epson RX-80 printer, this book aims to tame these peripherals for the owner who already has a good knowledge of Basic.

Though the initial discussion of the new commands you'll encounter is a trifle dry it is well stocked with tips and warnings, and is clearly laid out. Then follows practical application of this new knowledge in the development of several data-handling programs It will take a fair while to absorb the information contained here but should help new disk owners greatly

John Minson

```
3,a,11,a,8,a,11,a,13,a,14,a,9,a,
7,2*a,5
 104 DATA a/2,5,a/2,4,a*1.5,2,a/
2,4,a/2,6,a/2,7,2*a,9,a/2,14,a/2
,13,2*a,11,a,11,1.8*a,9,a,14,a,1
3,a,11,a,9,a,11,a,13,a,14,a,9,a,
7,2,6
 105 DATA 99,99
 115 PRINT '"While shepherds wat
ched thier   flocks by night."
RESTORE 120  FOR n=1 TO 2
 116 READ b,c  IF b=99 THEN REST
ORE 120  PAUSE 20  NEXT n  PAUSE
 50  GO TO 200
 117 BEEP b*1.5,c  GO TO 116
 120 DATA a,5,a*1.5,9,a/1.5,9,a,
7,a,6,a,10,a,10,a,8,a,7,a,9,a,10
,a,12,a,11,a*2,12
 130 DATA a,9,a*1.6,14,a/1.6,12,
a,10,a,9,a,7,a,5,a,4,a,8,a,7,a,5
,a,5,a,4,a*3,5
 140 DATA 99,99
 200 RESTORE 220
 205 PRINT '"Hark the herald ang
els sing."
 206 RESTORE 220  FOR n=1 TO 2
 210 READ b,c  IF b=99 THEN REST
ORE 220  PAUSE 20  NEXT n  PAUSE
 50  GO TO 300
 215 BEEP b,c  GO TO 210
 220 DATA a,2,a,7,a*1.5,7,a/1.6,
5,a,7,a,11,a,11,a,9,a,14,a,14,a*
1.5,14,a/1.5,12,a,11,a,9,a*2,11
 225 DATA a,2,a,7,a*1.5,7,a/1.5,
5,a,7,a,11,a,11,a,9,a,14,a,9,a*1
.6,9,a/1.5,6,a,6,a,4,a*2,2
 230 DATA a,14,a,14,a,14,a,7,a,1
2,a,11,a,11,a,9
 235 DATA a,14,a,14,a,14,a,7,a,1
2,a,11,a,11,a,9
 240 DATA a*1.5,16,a/1.6,16,a,16
,a,14,a,12,a,11,a*1.5,10,a,9,a/1
,5,11,a/1.5,10,a*1.5,14,a/1.5,7,
a,7,a,9,a*2,11
 265 DATA a*1.5,16,a/1.5,15,a,16
,a,14,a,10,a,11,a*1.5,12,a,9,a/1
.5,11,a/1.5,10,a*1.5,14,a/1.5,7,
a,7,a,9,a*2,7
 260 DATA 99,99
 300 LET s=2  PRINT '"It came up
on the midnight clear."
 310 FOR n=0 TO 1  RESTORE 330
 315 READ b,c  IF b=99 THEN PAUS
E 20  NEXT n  PAUSE 50  GO TO 40
0
 320 BEEP b*1.5,c  GO TO 315
 330>DATA a/s,8,a/s,7,a,9,a,7,a,
5,a/s,7,a/s,8,a,10,a,9,a,7,a,12,
a,12,a,9,a/s,10,a/s,12,a,14,a*s,
12
 340 DATA a/s,9,a/s,10,a,12,a,12
,a,9,a,5,a,10,a,8,a,7,a/s,5,a/s,
7,a/s,9,a/s,10,a,12,a,9,a,7,a*s,
5
 350 DATA a,5,a,4,a,2,a,4,a,7,a*
s,5,a/s,4,a,2,a,9,a,7,a,5,a,4,a,
2,a*s,0
 360 DATA a,0,a,12,a,10,a,9,a/s,
7,a/s,9,a,10,a,9,a,7,a/s,5,a/s,7
,a/s,9,a/s,10,a,12,a,9,a,7,a*2,5
 370 DATA 99,99
 400 PRINT '"O little town of Be
thlehem."
 410 FOR n=0 TO 1  RESTORE 430
 420 READ b,c. IF b=99 THEN PAUS
E 20  NEXT n  PAUSE 50  GO TO 6
 425 BEEP b,c  GO TO 420
[redacted]
 430>DATA a*s,2,a*s,7,a*s,7,a*s,
7,a*s,9,a,11,a,9,a,11,a,12,a*s,1
4,a*s,11,a*s,10,a,11,a,7,a*s,9,a
*s,9,a*(s*1.5),7
 440 DATA a*s,2,a*s,7,a*s,7,a*s,
7,a*s,9,a,11,a,9,a,11,a,12,a*s,1
4,a*s,11,a*s,12,a,11,a,7,a*s,9,a
*s,9,a*(s*1.5),7
 450 DATA a,7,a,11,a*(s*1.5),14,
a,16,a,14,a,12,a,11,a,9,a,7,a,9,
a,11,a,12,a*s,14,a*s,2,a*s,7,a*s
,11,s*a,9,a*s,7,a*(s*1.5),2
 455 DATA a*s,2,a*s,7,a*s,7,a*s,
7,a*s,9,a,11,a,9,a,11,a,12,a*s,1
4,a*s,11,a*s,12,a,11,a,7,a*s,9,a
*s,9,a*(s*1.5),7
 600 DATA 99,99
9997 RESTORE 450  GO TO 420
9998 SAVE 'C CAROLS" LINE 1
9999 POKE 23693,56  BORDER 7
```

Xmas Holly

on Spectrum

This short and simple program will add a seasonal touch to your TV or monitor screen. If you print it out it could also be useful for last minute Christmas cards

```
1 REM "*** XMAS HOLLY ***"
2 REM * SINCLAIR SPECTRUM *
3 REM "by E.A.DUNCAN-DUNLOP"
4 REM 1 DAN-Y-LAN ABERKENFIG
5 REM Nr BRIDGEND MID GLAM
20 LET C=25: LET B=7
25 PAPER 0: INK 4: CLS
30 FOR A=5 TO 230 STEP 40
40 PLOT a,b
50 LET C=(RND*40)+10
60 DRAW C,C,1
70 DRAW -C/3,-C/5,-2
80 DRAW -C/2.5,-C/5,-2
90 DRAW -C/5,-C/3.4,-2
100 DRAW -C/10,-C/3,-2
110 REM other half of leaf
120 DRAW C/2.5,-C/10,-2
130 DRAW C/3.4,C/5,-2
140 DRAW C/3.4,C/3.4,-2
150 DRAW 0,C/2,-1
160 NEXT A
170 LET B=B+50
180 IF B<150 THEN GO TO 30
```

Xmas Holly
by E Duncan Dunlop



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All versions of 'The Hobbit' are identical with regard to the adventure program. Due to memory limitations, BBC cassette version does not include graphics.

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★ Animated characters, special effects and sound

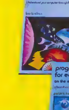
Surviving is success enough, but escaping with the treasure is the ultimate achievement and won't be easily accomplished!

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For BBC Micro and Electron Users









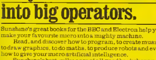










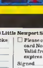


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Data Read

on Spectrum

Have you ever spent ages frantically trying to find the last error in machine-code data statements? It can be very tiring on the eyes trying to check hundreds of numbers from a M/C listing

However, if you own a Currah micro-speech and ZX Spectrum it is possible for the speech synthesiser to read out the data to you without you once looking at the screen. Simply type in the program exactly as listed and *Run* it The program will then ask you for the start line of the data statements

If you want you could try modifying the program so that it *Peeks* a block of M/C rather than *Reading* it from data statements It would also be a simple matter to modify the program for any speech synthesiser for any computer If you have a speech recognition unit it may even be possible to read out the data to you without you once looking at the screen. Simply type in the program exactly as listed and *Run* it. The program will then ask you for the start line of the data statements

If you want you could try modifying the program so that it *Peeks* a block of M/C rather than *Reading* it from data statements It would also be a simple matter to modify the program for any speech synthesizer for any computer

```
9500 LET keys=0: RESTORE 9509:
DIM b$(10,10): FOR a=0 TO 9: REA
D b$(a+1): NEXT a
9501 INPUT "Start of data statem
ents "(f: RESTORE f
9502 READ a: LET a$=STR$ a
9503 IF a<0 THEN  LET a$="m(ii)(
nn)uz": PAUSE 10: LET a=ABS a
9504 LET a$=STR$ a
9505 FOR b=1 TO LEN a$:
9506 LET c=VAL a$(b): LET s$=b$(
c+1)
9507 PAUSE 60: NEXT b: LET a$="k
om(ar)"
9508 GO TO 9502
9509 DATA "n(or)t","wu(nn)"."t(n
uu)","(dth)r(ee)","f(oo)r","f(ii
)v","sikz","sevn","(ai)t","n(ii)
n"
```

Data Read
by N Osborn

Memory Search

on Amstrad

The program enclosed is a fast memory search. It will search through the whole 64K of computer memory in 16 seconds for any given string

A blow by blow description follows:

Program notes

Line 10 Set up windows.

Line 20 Create a dummy string (F$) and prompt user

Line 30 This method to input user commands is not the most efficient when only two options are required, It was included as an interesting way to accept keys. It can be used with any number of keys, on any computer supporting the *Instr* function. (you can do away with the *Upper$* if required. Note the leading space in the quotes is required to catch null entries

Line 40 Catches any illegal key pressed.

Line 50. Accepts string to search for (if required)

Lines 60 70 Accepts string of values which are concatenated into the search string

Line 80 Accepts starting address. The complex part at the end converts those nasty negative values BASIC returns when you take the value of a number larger than &7FFF

Line 90 Sets up a counter (A) to step through the memory Converts the address into MSB/LSB form Note we can't use amstrads modulus division here as it falls over at values greater than &7FFF, (not a bug, its only supposed work on integers!) The pokes are the heart of the routine Basic has stored the address of the dummy string (F$) We poke the new values into this area and fool the system into thinking the string lives elsewhere, at our address. The *Instr* function is used to check the string for the search string

Line 100 Prints the current address being searched, closes the loop and finishes

Line 110 Subroutine to display the address of any matching bytes.

Notes. All values can be entered in decimal or hex (preceded by &) The routine can be converted to other machines which support the *Instr* command. The pokes on line 90 may have to be replaced with *Poke* VARPTR(F$)+1, A-M*256 *Poke* VARPTR(F$)+2,M. The window commands may be omitted for other machines.

```
5 REM Memory search by Mark Rice. Viking Software 1984
10 MODE 1:WINDOW 1,40,1,3 :WINDOW #1,20,40,10,20 :WINDOW #2,1,20,10,10
20 CLS :F$=SPACE$(250) :PRINT "S tring or B yte search "
30 ON INSTR("  SB",UPPER$(INKEY$)) GOTO 30,50,60
40 GOTO 30
50 INPUT "Search string ";S$ :GOTO 80
60 PRINT "Enter bytes (null to end)"
70 INPUT ">";B$ :IF B$<>"" THEN S$=S$+CHR$(VAL(B$)):GOTO 70
80 INPUT "Start address ";A$ :S=VAL(A$)-(VAL(A$)<0)*65576
90 CLS #1 :FOR A=S TO 65535 STEP 200 :M=INT(A/256)
:POKE DS$+1,A-M*256 :POKE DS$
+2,M :F=INSTR(F$,S$) :IF F<>0 THEN GOSUB 110
100 PRINT #2,HEX$(A,4) :NEXT :GOTO 20
110 PRINT #1," 'HEX$(A+F)'H";A+F :RETURN
```

Memory Search
by M Rice

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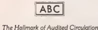
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Tony Bridge's Adventure Corner

A warrior's tale

Across the frozen lakes and forests of the snow-covered land shines the vast saffron moon. The deep snow muffles all sound, even the shriek of a small animal, surprised by a larger predator

But not all is desolation and fear A narrow track, now almost hidden by an earlier snowfall, winds through the trees leading to a small resting place a haven in the bleak land The surrounding snow is bathed in warm light from the misted windows Let's draw closer .

Flames from the roaring, crackling fire paint the walls with their light and wake the amber heart of the hot wine. "Come now, lad, tell us the story!", cackles one of the group around the fire "At the turn of the year, we must all repay, with a good tale, the master of this comfort-house for his attentions during the last twelve-month Even strangers, so — let us hear thine"

He is speaking to a young warrior, sitting in the midst of these old men, his broad-sword and leather shield close by his side

"Aye, I will tell you a story — but not for mine host, welcome though his ministrations have been in this cold night. No, I shall relate my tale for the sake of my master The Grand Elf. He is sore pressed in this festive season and has sent me in his place Now, fill your jugs with wine and listen to what he has to tell you "

From beneath his chain mail, the warrior brings forth a crumpled sheaf of papers Following the words with a calloused finger he begins to read, slowly and haltingly:

"As Old Father Time turns his back on 1984 and hobbles off, young 1985 prepares to take over Winston Smith didn't emerge from his cocoon and the world didn't end as some predicted. But it has been a pretty important year for us computer-users.

"And especially for that most important section, the adventurer (of course, we are a special breed!). Arcade games have become extremely sophisticated in the last year, but to me they have all become the same at this time last year, even I, ancient as I am, would eagerly await the release of a new Arcade Hit In the last few months however, along with younger players of my acquaintance, I have become rather bored with the latest *Fred Eats a Hamburger* or *Cosmic Cabbages from Cricklewood* But adventures have gone from strength to strength. The genre has been, and still is, under attack from those who would wring commercial advantage from any quarter — 'Ah!' they say 'These Adventure thingies seem to be quite popular Get the programmers on it, bung in a four-colour cassette insert, give away a few thousand quid, and we'll clean up' This may seem cynical, but there is an awful lot of trash at the top end of the market (price-and package wise), but super stuff at the lower end. Adventures, you see don't necessarily rely on super-fast machine-coding, although that makes the whole thing even better — no, even slow response times can be forgiven, as *long as both scenario and atmosphere are interesting* "

Here the young warrior stops and gazes meaningfully at the faces around him, before carrying on "You will, I think, expect me to concentrate on the main adventures of the year in this retrospective 1983 brought us *The Hobbit*, probably the most influential program (at least in Britain); influential, that is, in bringing adventures to the attention of many who would otherwise have thought the genre boring *Valhalla* was the other main adventure of 1983, and both these programs are still with us

"1984, meanwhile, has seen the release of *Lords of Midnight* and *Doomdark's Revenge* LOM has been as influential as the others mentioned, and there is surely no need for an introduction.

"Another event has made an impact and that is the release, on Compunet, of MUD — the Multi User Dungeon. This is an interactive and dynamic adventure, which changes daily and according to who is playing at the time For those of you already hooked, look out for the regular series of articles in *Micro Adventurer* by one of the authors, Richard Bartle

"More good news for Commodore owners was the release of many of the Infocom masterpieces at a very affordable price (although only on disc) — now how about the Atari, Apple and IBM versions? In fact, CBM 64 software is getting better and better, witness *Macbeth*, which I spoke about recently

"A feature becoming more widely-used is the cash prize While *Eureka's* 25,000 green ones is impressive, the more modest £400 from Incentive Software for the first adventurer past the winning post of *The Ket Trilogy* is linked to a much better adventure Rumour has it that the prize has now been won, and by one of the Corner's correspondents, to boot!

"Meanwhile, Level 9 consolidated their position as producers of the most interesting home grown games available It has added excellent graphics to develop the atmosphere of its games

"The Amstrad, I think will be around for a long while, thanks to the built-in monitor. Because of this, the display is probably the best of the home micros, and there are already some pretty good adventures for the machine, such as the *Arnold* series from Nemesis Software

Although it would be easy to discuss the well-publicised adventures of 1984, for me the important programs are the less well-known adventures "

Laying down the sheaf of papers, the warrior stops Here my master has paused to gather his strength. The Grand Elf has enjoined me to return here, at the same time, in fourteen days Then I shall complete his tale To give thee good cheer until then he sends his wish that you enjoy this season of goodwill. And he hopes to see you here again in the New Year, safe and well "

'Aye, lad, well done!" answers one of the old men, nodding slowly 'Thy master is surely a sage scribe, whose thoughts must be slowly digested and pondered. Raise thy cups to The Grand Elf and the noble pastime to which he devotes his waking hours!"

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Accidental loss

R Watson of Dundee, writes.

Q I have a Dragon 32 and I have been trying to write a piece of code that will enable me to restore a program that has been accidentally *Newed*.

I have not had any success at all so far. Is this actually possible on my machine, and if so how?

A One method that you could use is to include the routine below in your programs. Once it has been included then to restore a *Newed* program, simply enter *EXEC 32750*

```
10 CLEAR 300 32749
20 DATA 158 25,189 131 49,2,150,27,
183,29 189 31 57
30 FOR I = 1 TO 14
40 READ a. POKE 32749 + I,a
50 NEXT I
```

16K upgrade

J Wennton of Billingham, Cleveland, writes

Q After previously buying my children a Sinclair Spectrum 16K in December 1982, I have been disappointed at their lack of interest. They say it is outdated and that all the games they have/borrow are 48K

To help rekindle their interest (and my interest) could you please advise:

1. Do we sell and buy a BBC?

2. What is the best way to upgrade to 48K?

3 Which are the best and most useful add-ons?

4 Can we upgrade the machine past 48K?

A I sympathise with your problem — the 16K machine has always suffered from a lack of software, and indeed could be said to be outdated, due to its limited memory capacity

I will try and answer your questions one by one, as honestly as I can, bearing in mind that I am as prejudiced as the next man.

I would not sell and buy a BBC firstly because the second hand market for 16K Spectrums is not good, and secondly because the software you have already bought will be wasted.

The simplest way to upgrade to 48K is to buy a 32K rampack. This is available from most computer shops that stock the Spectrum From your point of view the best add-ons would seem to be those which will assist game playing I would recommend a programmable joystick (such as that manufactured by Cambridge Computing)

As far as upgrading the machine past 48K is concerned, the answer is yes you can upgrade, but for what?

There is very little software that makes use of the extra memory available, so I would not suggest that as a course of action for you. Personally, I have never found the Spectrum's memory size to be a major problem.

Amstrad advice

Andrew Hayward of Chellaston Derby writes

Q I am on the brink of buying the Amstrad CPC464 computer as my second home micro. I'm writing to you to ask for your advice Do you think the Amstrad is going to be a contender in the future against the Spectrums and the Commodores? If so, how well is it backed up by software houses compared with the older micros after their first few months on the market?

A The Amstrad is certainly here to stay I think that it will retain a good share of the home computer market, although more software becoming available will not harm its cause

A number of software houses that have already made their names (and their money) in the Spectrum/Commodore software market are already offering or developing Amstrad versions of their popular games (and other software) I would say that there is not as much software available for the Amstrad as there was for some of the more established micros at the same time in their development, but this is more than compensated by the quality of the Amstrad offerings which is significantly higher

Compatability problem

Q With the launch of Commodore's new computers, does this mean Commodore are phasing out the Vic 20?

If so will I be able to play their future games on my Vic 20 with a 16K (switchable) expansion pack.

A The Vic 20 does not appear to play any part in Commodore's plans for the home computer market in the future This means that Commodore supplied software for the Vic will not be produced in the future, although some software houses will continue to produce games for this once-popular computer Software produced for the new Commodore machines will not be any more compatible with the Vic than is the Commodore 64

It has always seemed ludicrous to me that home computing should be the one area in the computer field where hardware manufacturers seem to strive to ensure that their customers end up with machines that have a limited life, ie are not compatible with more advanced or more powerful computers that are produced later

Commodore is not alone in this attitude, Sinclair has done exactly the same with the ZX81, Spectrum and QL None of these machines is capable of running software produced for the other

I think that maybe it is time that the manufacturers started considering the enhancement sales market as well as the new or second computer sales market (which must be starting to dry up now)

Mathematical mystery

A Crawley of Penrith, Cumbria, writes

Q I am trying to find out how to calculate π to any given accuracy (more accurately than usually stored in the computer's Rom) I know it must be possible since various posters and books have shown the expansion of π correct to many, many decimal places. What method is used and is it possible to adapt it for a home computer?

A The calculation of π to masses of decimal places has kept mathematicians busy for some considerable time Many books have been written on the subject of how to use 'calculating engines to assist in the calculation of even more obscure decimal places There is indeed an established method for the calculation of π which is documented in more books than I have had hot dinners

The calculation is suitable for programming on any computer that allows floating point arithmetic to be performed. You need this type of capability to achieve the degree of accuracy required.

It may be simpler for you to simply store a value for π (obtained from one of the books you have seen) that has more decimal places than you require, and simply round up to the decimal place required by the particular calculation you are to perform.

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Hobbit on Commodore 64. How do I get into the barrel at the Elvenkings Halls? How do you get into the boat at the fast black river? Jonathon Carruthers, 191 Raikes Lane Birstall, Batley, W York (Tel. Batley 477121)

Voodoo Castle on Vic20. How do I stop the test tubes from exploding and killing me? And where do I find the missing page? Gary Tippetts, 124 York Road, Carterton, Oxon.

Valhalla on Spectrum. How do you find the fourth quest — Skornir I have the other three but can't get any further Robin Moffatt, 29 Donkin Terrace, North Shields, Tyne and Wear.

Tombs of Xeiops on Commodore 64. I can't get the torch lighted and how do you get through the sandy door? David Raine 37 Caroline Gardens, High Howdon, Wallsend, Tyne and Wear

Snadman

Out of the jungle the ape leads, then hee then monkey then vulture feeds.

Sherlock Holmes on Spectrum. How do you prove Mrs Jones killed Tricia? Where is the old mill road? David Thomas 9 Forbes Close, Higher Faugan, Newlyn, Penzance, Cornwall.

OUT OF THE JUNGLE the ape leads then hen, then monkey then vulture seeds.

Colditz on Spectrum. How do I get the wire cutters? Where is the prisoner that needs help? D Bugdan, c/o 65-66 Dean Street, London W1

Invincible Island on Spectrum. How do you get help after a game? How do you get in the dingy? Adam Buckle 188 Barnsley Road, Cudworth, near Barnsley, S Yorks.

Paradox on Spectrum. Where will I find a definition of reality? What use is the wooden door? Dean Brown, 47a Scarborough Avenue Skegness, Lincs

Castle of Riddles on BBC How do I open the safe in the courtyard and how do I get down the well (if I should)? Richard Branton, 7 Fairview Drive, Danestone, Aberdeen, Scotland.

Hobbit on Spectrum. How do I escape Golum? Whenever I answer his riddles I get strangled from behind. S Jeffries, 14 Preston House Paddock, Walsall, W Midlands.

Hulk on Spectrum. How do you get through the door by the chief examiner? Peter West, 10 Grange Avenue, Falsgrave, Scarborough, N Yorks.

Black Crystal on ZX81. How do I 49Y from Floor1 in Map 2. I have got the visibility spell. Kevin Dixon, 32 Roxholm Road, Leasingham Sleaford, Lincs

Pirates Cove on Vic20 Can someone please tell me what to do to catch the fish to feed the crocodiles. Gareth Maybank, 52 Arden Crescent, Dagenham, Essex.

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Ship of Doom on Spectrum. How do you use the sonic screwdriver? How do you get the key from the glass case? Can you melt the ice? Gaving Read, 45 Avenue Road, Falsgrave, Scarborough, N Yorks

Rescue from Castle Dread on Vic 20 I have reached the castle but how do you use the barrel there or get in? Tom Maskell, 35 Southampton Road, Lymington, Hants.

Fantasia Diamond on Spectrum. How do I open the music room door? I have the diamond violin, baton and books Rod Jones 18 Buttermere Drive, Allestree, Derby

Golden Apple on Spectrum. Can you move the lever without breaking it? How do you light the gas lamp? How do you cross the ravine? HOw do you climb the cliff? Andrew Davros Simmons 3 High Street, Drybrook Glos.

Mountains of Ket on Spectrum. I cannot get past the dragon or the skull Robert Mowe, 25 Saxham Street, Stowupland, Stowmarket, Suffolk

Knights Quest on Spectrum. How do you rescue the princess? Where do you find a light to enter the dark tunnel? A Wattars 40 South Grange Avenue Prestonpans, East Lothian, Scotland.

Fantasia Diamond on Spectrum. How do you cross the river and what does 'wait for it' mean? John Whelen 114 Laburnum Grove, Runcorn, Cheshire.

Karoos of Karn on Commodore 64. How do you kill the spider get past the witch and kill the vampire? P M Berry Pay Office 1 Gordons, BFPO 24

Lords of Time on Spectrum. How do I get past the cavemen? Brian Finnerty, 23 Towersey Drive, Thame Oxon.

Inca Curse on ZX81 How do you get out of the fire room alive? Which articles do you need to get down the porthole? Seth Feltham, 141 Piccasso Way, Shoeburyness, Essex

Adventureland on Vic20. I cannot get past the bear which is blocking my way Gareth Pemberton 81 Redhouse Lane, Bredbury Stockport Cheshire.

Inca Curse on Spectrum. I cannot get the tyre out in the tyre room. Please help Stuart Langridge. 17 Admiral's Road Park Gate Southampton.

Old Father Time on BBC I am stuck in the clearing and lost in the forest. Scott Kelly 12 Pollock Road, Bearsden, Glasgow

Special Operations on Spectrum. I cannot get into the compound. Michael Cooney off Galway Road, Roscommon, Co Roscommon, Eire.

The Hobbit on Spectrum. Once through the wine cellar how do you find lake town and 'bard'? where is the key for the mountain side door? John Osbourne, 28 Edwin Avenue, Woodbridge, Suffolk.

Voodoo Castle on BBC How do you get the ju ju bag? Jason Wright, 99 Carter Drive Collier Row, Romford, Essex.

Hobbit on Commodore 64 I am trapped in the goblins dungeon. I have found the key and I have the sword, the rope, the golden key the cup and the curious key Chris Barnes, 19 Scafwell Way, Clifton, Nottingham.

Hobbit on Spectrum. How do I escape from the goblins dungeon? How do I escape down the river from the elevenkings halls? James Haslam, 6 Sittingbourne Avenue Bush Hill Park Enfield Mddx.

Valhalla on Spectrum. I cannot find Ofnir and I have had the program for three months now Help! Paul Waggett, 9 Lexton Drive Churchtown, Southport, Merseyside

Curse of the Werewolf on Vic20 How do you get into the castle that is guarded by the zombie Guy Cliffe-Jones, 28 Somerset Road, Edgebaston, Birmingham

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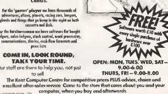


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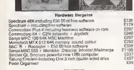


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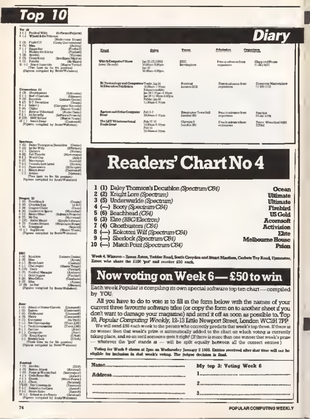
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Top 10

Vic 20
1 (–) Pools of Willy (Software Projects)
2 (–) Wizard & the Princess (Melbourne House)
3 (3) Flight 015 (Craig Communications)
4 (5) Mine (Jetsoft)
5 (–) Hover Bar (Firebird)
( ) Mickey the Bricky (Firebird)
7 (8) Bandito (Visions)
8 (5) Crazy Kong (Intelligent Micros)
9 (7) Punchy (Mr Micro)
10 (–) Space Scramble (Master Tronic)
(Two lines tie for 5th position)
(Figures compiled by Boots/Websters)

Commodore 64
1 (3) Ghostbusters (Activision)
2 ( ) Staff of Karnath (Ultimate)
3 (8) Scrabble (Leisure Genius)
4 (7) D.T. Decathlon (Ocean)
5 (–) Select 1 (Computer Records)
6 (4) Chiller (Master Tronic)
7 (–) Alice in Videoland (Audio Genic)
8 ( ) Jet Set Willy (Software Projects)
9 (10) BMX Racers (Master Tronic)
10 ( ) Beach Head (Centresoft)
(Figures compiled by Boots/Websters)

Spectrum
1 (2) Daley Thompson's Decathlon (Ocean)
2 (3) Jet Set Willy (S/Project)
3 ( ) Chequers (Vortex)
4 (4) Full Throttle (Micromega)
5 ( ) World Cup (Artic)
6 (6) Matchpoint (Sinclair)
7 (–) Tornado Low Level (Vortex)
8 (–) Pyjamarama (Mikrogen)
9 ( ) Beach Head (Centresoft)
( ) Avalon (Hewson)
(Two lines tie for 9th position)
Figures compiled by Boots/Websters)

Dragon 32
1 (6) Hunchback (Ocean)
2 (5) Chuckie Egg (A & F)
3 (9) Dragon Chess (Oasis)
4 (4) Cuthbert in Space (Microdeal)
5 (1) Manic Miner (Software Projects)
6 (7) Mr Dig (Microdeal)
7 (10) Sprite Magic (Knight Software)
8 (2) Hungry Horace (Melbourne House)
9 (8) Kriegspiel (Beyond)
10 ( ) Bug Diver (Master Tronic)
(Figures compiled by Boots/Websters)

BBC
1 (4) Scrabble (Leisure Genius)
2 (2) Elite (Acorn)
3 (–) Stone Lars (Century)
4 (–) Challenger (Master Tronic)
5 (10) Duck (Firebird)
6 (9) Football Manager (Addictive)
7 ( ) Gold Digger (Firebird)
8 (8) Mine Office (Database)
9 (3) Elite (Acorn)
10 (6) Jet Set (Ultimate)
(Figures compiled by Boots/Websters)

Atari
1 (1) Attack of Mutant Camels (Llamasoft)
2 (2) Zaxxon (Centresoft)
3 (4) Gridrunner (Llamasoft)
4 (3) Slinky (Centresoft)
5 (7) Encounter (Hi-Tech)
6 (–) Sub Commander (Thorn EMI)
7 (–) Tank Commander (Thorn EMI)
8 ( ) Pacman (Atari)
9 ( ) Centipede (Atari)
(10) Henry Kapper (E/Soft)
(–) Steeple Jack (E/Soft)
(Three lines tie for 9th position)
(Figures compiled by Boots/Websters)

Amstrad
1 (7) Bandito (CDS)
2 (5) Roland Attack (Amstrad)
3 (8) Forest at World's End (Interceptor)
4 ( ) Code Name Mat (Amsoft)
5 ( ) Ghouls (Micro Power)
6 (–) Chess (Amstrad)
7 (10) Star Commando (Terminal)
8 (–) Roland in the Cave (Amsoft)
9 (–) Home Killer (Amsoft)
10 (–) Roland on the Ropes (Amstrad)
(Figures compiled by Boots/Websters)

Diary

Event	Dates	Venue	Admission	Organisers
Which Computer? Show (over 18s only)	Jan 15-17 (1985) 10.00am-6.00pm Jan 18 10.00am-4.00pm	NEC Birmingham	Free in advance from organisers	Clapp and Poliak 01-891 5051
BI Technology and Computers in Education Exhibition	Trade: Jan 24 10.00am-1.00pm Educationalists: Jan 24 1.00pm-6.00pm Jan 25 11.00am-6.00pm Public: Jan 26 11.00am-5.00pm	Barbican London EC2	Free in advance from organisers	Computer Marketplace 01 930 1612
Apricot and Sirius Computer Show	Feb 5-7 10.00am-5.00pm	Kensington Town Hall London W8	Free in advance from organisers	Paradox 01-241 1094
The LET '85 International Foods Show	Feb 17-18 10.00am-5.00pm Feb 19 10.00am-4.00pm	Olympia 2 London W6	Free in advance from organisers	Tarrat, Wheatland 0223 777000

Readers' Chart No 4

1 (1) Daley Thomson's Decathlon *(Spectrum/C64)* **Ocean**
2 (2) Knight Lore *(Spectrum)* **Ultimate**
3 (5) Underwurlde *(Spectrum)* **Ultimate**
4 (—) Booty *(Spectrum/C64)* **Firebird**
5 (6) Beachhead *(C64)* **US Gold**
6 (3) Elite *(BBC/Electron)* **Acornsoft**
7 (4) Ghostbusters *(C64)* **Activision**
8 (—) Kokotoni Wilf *(Spectrum/C64)* **Elite**
9 (—) Sherlock *(Spectrum/C64)* **Melbourne House**
10 (—) Match Point *(Spectrum/C64)* **Psion**

Week 4. Winners – Simon Aston, Tedder Road, South Croydon and Stuart Mantlam, Corbets Tey Road, Upminster, Essex who share the £100 'pot' and receive £50 each.

Now voting on Week 6 — £50 to win

Each week Popular is compiling its own special software top ten chart — compiled by YOU.

All you have to do to vote is to fill in the form below with the names of your current three favourite software titles (or copy the form on to another sheet if you don't want to damage your magazine) and send it off as soon as possible to. Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

We will send £50 each week to the person who correctly predicts that week's top three. If there is no winner then that week's prize is automatically added to the chart on which voting is currently taking place, and so on until someone gets it right! (If there is more than one winner that week's prize — whatever the 'pot' stands at — will be split equally between all the correct entries.)

Voting for Week 6 closes at 2pm on Wednesday January 2 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final.

Name.................................
Address.................................
....
....

My top 3: Voting Week 6
1.................................
2.................................
3.................................

New Releases

COMPELLING

What with *Elite*s continuing chart dominance it's possibly inevitable that most other BBC releases are tending to be overshadowed including a recent group of releases from Acornsoft Of these several are of more than passing interest and *Acheton* may keep Tony Bridge's postbag full for weeks

Apart from anything else, it's text adventure so vast it's contained on two discs It understands fairly complicated sentences like, for example, Take all but lamp and bottle and Drop the Keys. Several commands can be linked with each response appearing to each part of the conjoined sentence on screen but separately — so you can work out what bit didn't get the response you hoped for

There are no graphics but the screen is split into two sections, descriptions and command/result There are 350 locations to explore, treasure to collect for points and dozens of puzzles There is also an adventure equivalent of becoming *Elite* — venture far enough into the adventure and you may enter the Master section — an area so difficult that if you go in you will not be able to leave.

It's silly to attempt a serious analysis of an adventure so large as this until it's been around a while and time has been spent with it. My brief session has led me to believe it's pretty compelling I found a lot of interesting looking locations and solved one puzzle only to be killed. I'm going back for more though.

Program *Acheton*
Price *£17 95*
Micro *BBC*
Supplier *Acornsoft*
London Road
Wellingborough
Northants NN8 2RL

WISE AND FOOL

Amstrad owners into adventuring have been kept occupied (almost singlehandedly) by the *Arnold Blackwood* series of adventurers by Nemesis Software The third section has recently been completed and is entitled *The Wise and Fool of Arnold Blackwood.*

Although text only, the screen design for the program has been carefully considered so that descriptions, inputs, objects and responses are clearly delineated.

The blurb for the game boasts that there are no sudden deaths, ie, merely going *East* rather than *West* isn't going to leave you impaled on a spear or blasted by a death ray All that happens in the game is you go no further, unable to penetrate any further into the labyrinthine mysteries and hating yourself for being such a dummy

Characters from previous Arnolds turn up here — Mexican Pete, Lord Erbus, Rochdale features heavily as do gravestones and daffodils There are cinematic references aplenty for buffs and conspiracy theorists will enjoy the paranoia that pervades the adventure

Program *The Wise and Fool of Arnold Blackwood*
Price *£8 50*
Micro *Amstrad CP464*
Supplier *Nemesis*
10 Carlow Road
Ringstead
Kettering
Northants NN14 4DW

RUSTIC

Country Quest is an adventure for the Commodore 64 is the classic text mould — something of a rarity among recent Commodore releases The plot appears to entirely lack dragons and mystic orbs — another big bonus.

The story begins with you taking a holiday in darkest Herefordshire — you discover your cottage is the subject of much rumour, perhaps it contains a mystery or treasure even,...pretty creepy eh?

The different sections of the screen display are highlighted in different colours, I suspect that the game is more funny than serious since the first couple of locations contained a dog with money, a Commodore computer, a suit and other silly objects — very rustic.

Program *Country Quest*
Price *£5.50*
Micro *Commodore 64*
Supplier *Wye Valley*
Parton House
Kinnersley
Herefordshire

PENGUINS

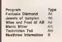
Manic Miner, the program that spawned a million inferior copies has reappeared, with a version for the Amstrad. How well does Willy travel? What's the music? Are there still penguins? These, I know, are the crucial questions Amstrad owners will ask

A close examination of the various screens in the demo mode (I never got past the sixth screen by legitimate means) reveals that they are almost exactly the same as the Spectrum ones almost pixel by pixel

If you have an Amstrad you will, I'm afraid, have to buy *Manic Miner* or else deny arcade games altogether

Program *Manic Miner*
Price *£*
Micro *Amstrad*
Supplier *Amsoft*
Brentwood House
169 Kings Road
Brentwood
Essex

This Week








Program	Type	Machine	Price	Supplier
Fantasia Diamond	Ad	Amstrad	£7 95	Hewson
Jewels of Babylon	Ad	Amstrad	£6 00	Interceptor
Wise and Fool of AB	Ad	Amstrad	£8 50	Nemesis
Manic Miner	Arc	Amstrad	£7 95	Amsoft
Technician Ted	Arc	Amstrad	£7 95	Hewson
Heathrow Internation	S	Amstrad	£7 95	Hewson
Logo	Ut	Amstrad	£19 95	Kuma
Sim	Arc	BBC	£7 95	CSM
Statis	Arc	BBC	£7 95	Palan
Country Quest	Ad	Commodore 64	£5.50	Wye Valley
Dungeons of Ba	Ad	Commodore 64	£12 95	Quicksilva
3D Lunattack	Arc	Commodore 64	£7 95	Hewson
Big Ben	Arc	Commodore 64	£7 00	Interceptor

New Releases

PICTURES

As has been said many a time in this and other columns the *Quill* adventure writing system has single-handedly raised the inventiveness of text adventures by allowing people with good ideas to implement them without recourse to machine code The *Quill* allowed for the creation of text only adventures, but the latest development from Gilsoft, *The Illustrator* changes all that — now your *Quill* adventures can be illustrated

The *Illustrator* is designed to be used after the basic text adventure has been created. What you get is a rather good artist program where each picture you create is assigned to a particular location — a cursor moves around the screen under keyboard control, you choose colours, rate of movement (for fine lines the cursor can be moved — one pixel at a time).

One very sophisticated feature of the program is a subroutine which enables you to define pictures for use within other locations — thus for example in a dungeon location as a maze section you might want some very similar looking rooms, perhaps the windows and doors may all look the same Simply design one window and one door and voila, as many as you want. The scale' feature lets you have bigger and smaller versions of a designed shape — so excellent feature

Shapes can be filled with any of 255 different kinds of shading and for those with a meticulosity bordering on the insane, there is a freestyle plotting option thets lets you switch on individual pixels.

All in all you're getting just about the best designer program I've seen for the Spectrum which just happens to be compatible with the *Quill*. One other amazing detail — the system works by using overlays meaning that effectively no extra memory is used in fact, Gilsoft say you get an extra 5K — leaving a total of 35K for your adventure You have the technology, now let's have the ingenious adventures.

Program *The Illustrator*
Price *£14 95*
Micro *Spectrum*
Supplier *Gilsoft*
30 Hawthorn Road
Barry
South Glamorgan

SANTA

All things considered, there are not too many Christmas programs around, is, programs which feature Santa Claus, reindeer, chimneys, toys, Christmas trees and the like Probably this is because the merry season doesn't last long enough — when it's over who's going to buy your Perils of Santa Claus epic?

Merry Xmas Santa is one of the exceptions and comes from Icon Software for the BBC Your task is to guide Santa across the rooftops delivering presents to all the houses Try to avoid the slope of the roof (or you'll slip to a snowy death) and on later screens rather lame looking snowballs

Here and there, there are bonuses in the form of cake, pudding and sherry The graphics are played as you leap across the rooftops But arcade addicts be warned technically it's nothing special — quite slow in fact, and whilst later

Pick of the week

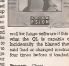
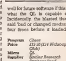
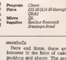
QL QUEEN

The almost mythical QL chess program is finally here and it is, quite simply, the best chess program available on any micro not only because it beats the pants off pretty much every other chess program (and most human players) but because the graphics are stunning

The chess board is presented edge on — the back appearing 'higher' than the front — thus you look on the proceedings as you would playing a normal game rather than from the top down as in all previous efforts This means that the highly detailed chess pieces appear to move around and behind one another — a startling effect

Every option you could conceivably want is provided — take back move, set up positions, change ends, hint (very useful), analysis (you can see the computer trying out different ideas), next best and so on. Particularly useful — the levels are defined according to how much time they take to respond, the choices range from a second or so to four minutes, so you know how long you'll need to wait for the next move The 'when the hell is this machine going to decide to do something' syndrome ruined many a computer chess program.

Psion's *Chess* is something of a salvation for QL owners, there should just be time to slip one into the Christmas stocking and have something to play with on the machine other than the four utilities — it augurs well for future software if this is what the QL is capable of. Incidentally the blasted thing said 'bad or changed medium' four times before it loaded

Program *Chess*
Price *£15 95 (£14 95 through Qlub)*
Micro *QL*
Supplier *Sinclair Research*
Stanhope Road

This Week

Castle of Jaseom	Arc	Commodore 64	£12.95	Quicksilva
Monopoly	S	Commodore 64	£12.95	Leisure Genius
Space Shuttle	S	Commodore 64	£8.95	Activision
Mubungly	Ad	Dragon	£1.99	Snipe
Cecil Plays 21	S	Dragon	£1.99	Snip
Craps	S	Dragon	£1.99	Snip
Telepath	Ut	Dragon	£1.99	Snip
QL Chess	S	QL	£19.95	Sinclair
Airwolf	Arc	Spectrum	£6.95	Elite
Technician Ted	Arc	Spectrum	£5.95	Hewson
Highway Code	Ed	Spectrum	£6.95	Rose Software
Physics O Level	Ed	Spectrum	£6.95	Rose Software
Panzer Attack	S	Spectrum	£5.95	Lothlorien
Space Shuttle	S	Spectrum	£7.95	Activision
The Illustrator	Ut	Spectrum	£14.95	Gilsoft

Key: Ad — adventure/Arc — arcade/Ed — education/
S — strategy-simulation/Ut — utility



screens get additional hazards they are all basically the same — not much variety here But in a generous Christmas mood of warmth and fellow feeling, I will say that little children might love it and for them the simplicity may be a bonus

Program	*Merry Xmas Santa*
Price	*£7.95*
Micro	*BBC B*
Supplier	*Icon Software 65 High Street Gosforth Tyne & Wear*



HAZARDOUS

Airwolf is the latest Spectrum release from Elite, makers of *Kokotoni Wilf* — the game is based on the popular blam-blam helicopter program Usually TV spin offs are pretty dire but Airwolf is graphically excellent and as a game it's not at all bad.

The idea, inevitably perhaps, is to pilot your copter through some incredibly difficult and dangerous terrain to rescue several important scientists and thus redeem the free world for another week

The first obstacle you come across may be enough to make you give in — your path is blocked by an enormous wall which you must blast a path through using a slightly wobbly laser

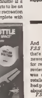


There are hazards to be negotiated, missiles, things to be blasted and some very detailed background graphics Probably the only thing stopping the program from being absolutely whizzo is the relatively small number of screens (about 12) which seems a little small, but since I never get beyond about the second screen, perhaps that doesn't matter all that much. If you're a fan of the TV program you'll probably love it.

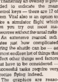
Program	*Airwolf*
Price	*£6.95*
Micro	*Spectrum*
Supplier	*Elite 55 Bradford Street Walsall WS1 3QD*

SPACED OUT

Activision's *Space Shuttle* is a program that purports to be an extremely authentic recreation of shuttle flight, complete with



docking, re-entry and a trillion calculations necessary for a successful flight. It's important to stress that *Space Shuttle* is primarily a simulation, not an arcade game, although some of the thrills involved may be similar



Thankfully an overlay is provided to indicate the main control keys — there are 17 of them Vital also is an option to take a simulator flight which lets you try out most manoeuvres without the usual risks

An extensive manual indicates just how complicated flying the shuttle can be — as almost endless list of things that affect other things and factors that have to be considered — successful tasks require very precise flying indeed.

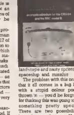
The graphics are reasonable, and the manual good. If you accept that it isn't 'blast a minute' but more a question of subtle control manipulation, you'll like it a lot

Program	*Space Shuttle*
Price	*£7.95/£5.95*
Micro	*Spectrum/ Commodore*
Supplier	*Activision 15 Harley House Marylebone Rd London NW1*

WARNING

And now a special request *F.S.S Liberator* is a program that's been out a while, but I've never seen it, ie, it wasn't sent for review and I haven't seen reviews elsewhere However, I was sent a copy of it by a retailer who thought it was so bad people ought to be warned about it.

F.S.S. Liberator is an amazingly bad program, a really poor version of *Scramble* with ugly blocks making up the mountain

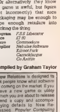


landscape and nasty sprites for spaceship and missiles

The problem with this one is that it all comes in a big box with a stupid colour poster thrown in — you'd be forgiven for thinking this was going to be something pretty special There are two possibilities here, the manufacturers Nebulae Software really haven't got any idea what a good game is and have moved into the software field from double glazing or selling ropey video tapes.

Or alternatively they know the game is awful, but figure (not incorrectly) that nice packaging may be enough to dupe enough retailers into stocking the thing

Program	*F.S.S Liberator*
Price	*£7.90*
Micro	*Commodore*
Supplier	*Nebulae Software Kilroot Park Carrickfergus Co Antrim*



Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases *Popular Computing Weekly* 12 13 Little Newport Street London WC2R 3LD

This Week

Activision, 15 Harley House, Marylebone Road London NW1 01 486 **Amsoft,** Brentwood House 169 Kings Road, Brentwood Essex, 0277 230222 **CSM,** Suite 38 Strand House Great West Road Brentford, Middlesex TW8 9EX 01 560 4191 **Elite,** 55 Bradford Street, Walsall WS1 3QD 0922 611215 **Gilsoft,** 30 Hawthorne Road Barry, South glam 2CF 8BLE 0222 41361 **Hewson,** 7 Grahame Close Blewbury, Oxon OX11 9QE 0235 832939 **Interceptor,** Interceptor Micro's, Lindon House The Green, Tadley Hampshire, 07356 71 145 **Kuma,** Kuma Computers, 12 Horseshoe Park, Pangbourne, RG8 7JM, 07357 4335 **Liesure Genius,** 3 Montagu Row, London W1H 1AB, 01 935 4622 **Lothlorien,** 56a Park Lane, Poynton Cheshire SK12 1AE 0625 876642 **Nemesis,** 10 Carlow Road Ringstead, Kettering Northants NN14 4DW **Pelon,** 22 Dorset Square London NW1 6QG, 01 723 9408 **Quicksilva,** Palmerston Park House, 13 Palmerston Road Southampton, Hampshire SO1 1LL, 0703 20169 **Rose Software,** 148 Widney Lane, Solihull, West Midlands B91 3LH 021 705 2895 **Sinclair,** Stanhope Road, Camberley, Surrey GU15 3PS, 0276 686100 **Snip,** PO Box 20, Woking Surrey, GU21 3QW **Wye Valley,** Parton House, Kinnersley Herefordshire, 05446 202

MSX contest

Last week I was given (temporarily, I might add) seven MSX computers to review for this magazine.

It was really quite difficult because they were all, to all intents and purposes the same machine with only superficial differences. In fact, it was hard not to turn the review into a beauty contest.

Loud tuneless fanfare

Mix out of the opening titles to a shot of our host, a large Irishman with a winning personality.

WOGAN (for it is he)
"Hello and welcome to the 1985 MSX United Kingdom contest. We've a star-studded evening for you tonight, and, as you know, it is our task to choose just one computer to go on to represent the United Kingdom in the MSX World competition. But first, let's meet the judges"

Cut to a close-up of a rather world-weary man

GARY KNOALL
"Good evening. I'm much more interested in real computers — you know, anything American costing over £1 500 — but I'm here tonight to lend some credibility to the proceedings"

Close shot of a keen-looking youngster in what is obviously his father's suit

STEVE F LOADER.
"My name's Steve Loader and ever since being allowed to keep my review model I have been considered an expert on MSX computing"

After a small technical hiatus we eventually settle on a close-up of a smoothly dressed young woman

TERESA BLASE
"As a leading journalist I specialise in writing copy that does not offend our advertisers. I'm here to prove that there is no sexism involved in this evening's proceedings."

After the sound of the stage manager trying to start some applause we return to our host

WOGAN
"In a moment we'll be seeing the contestants but first please welcome The Morris Dancers with their version of *All I want for Christmas*"

The start of the routine is accompanied by the sound of televisions being switched off all over the country..

If MSX computing does take off then things could become almost that trivial.

The Japanese are not known for resting on their laurels — even if a manufacturer is producing a highly successful machine, there is likely to be a new model every year.

Yet, unable to change the basic components, will Panasonic bring out a computer with a built in alarm clock/radio?

Could Canon build a machine that automatically rewinds the cassette once the tape has loaded?

At least it would give us something more to consider than measurements, trim and matching accessories.

Jeff Naylor

Simple Simon

Puzzle No 138

The pantomime season is upon us — and here is our very own version of 'Simple Simon'.

Once upon a time there lived a poor orphan boy called Simple Simon. He was very good and always ate his greens, but the villagers teased him cruelly. One day while walking through a lonely part of a dark forest he rescued an old lady from the grip of robbers. But, unexpectedly, she turned out to be a good fairy in disguise.

"For this kind act," she said, "remember these words — 'Your lucky number is 13 less than 18 times the product of its digits!'" With this she vanished in a puff of smoke.

Now it so happened that at the Royal Palace the King was counting his money in the royal vaults when the door slammed shut. The only way it could be opened was by means of a five-digit combination known only to the King who was not able to communicate it through the thick walls. A plea went out for anyone who might know the combination. Simple Simon stepped forward, much to the amusement and derision of the people. Remembering the good fairy's words, he entered his choice of number and, the door of the vault swung open. Simon was amply rewarded, no-one ever teased him again, and everybody lived happily ever after.

Can you say what the combination was?

Solution to Puzzle 133

The following numbers also share the same property as Tommy's age: 12, 18, 20, 32, 44, 45, 50, 56, 63, 68, 75, 76, 92, 98 and 99.

Taking numbers in the range two upwards, the program extracts their whole number divisors and tests to determine if the product is equal to the square of the original age.

```
10 LET AGE = 2 20 LET SQUARE = AGE * AGE 30 LET P = 1 40 FOR N = 2 TO AGE - 1 50 LET D = AGE/N D = VAL(STR$(D)) 60 IF D = INT (D) THEN LET P = P * D 70 NEXT N 80 IF P = SQUARE THEN PRINT AGE 90 LET AGE = AGE + 1 100 IF AGE > 100 THEN STOP 110 GOTO 20
```

Winner of Puzzle No 133

The winner is Mr P E Webber of Ridgeway Rd, Salisbury, Wiltshire, who receives £10.

Rules

If the puzzle can be sensibly solved using a computer, then the winner will have included a listing of the program used to find the correct answer. The closing date for Puzzle No 138 is 4 January 1985.

The Hackers

The hardware for our new system has now reached the production stage!

& the software is completely debugged!

Unfortunately, the advertising campaign won't be ready for another six months.

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SKETCH PAD
DASH MAH BABY!
THAT'S YOUR TAX-RELIEF, BUDDY AND THAT'S MY BRIBE - THANKS!
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